SUMMARY OF ACTIVITIES

OF THE

COMMITTEE ON SCIENCE AND
TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

FOR THE

ONE HUNDRED ELEVENTH CONGRESS

DECEMBER 30, 2010

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+ The Chairman and Ranking Minority Member shall serve as Ex-officio Members of all Subcommittees and shall have the right to vote and be counted as part of the quorum and ratios on all matters before the Subcommittees.
LETTER OF TRANSMITTAL

December 30, 2010

The Honorable Lorraine C. Miller
Clerk
U.S. House of Representatives
Washington, DC 20515

Dear Ms. Miller,

In compliance with Rule XI, Clause 1(d) of the Rules of the House of Representatives, I hereby submit the Summary of Activities for the Committee on Science and Technology for the 111th Congress.

The purpose of this report is to provide the Members of the House of Representatives, as well as the general public, with an overview of the legislative and oversight activities conducted by this committee, as defined by Rule X, Clause 1(o) of the Rules of the House of Representatives.

This document is intended as a general reference tool and not as a substitute for the hearing records, reports, and other committee files.

Sincerely,

BART GORDON
CHAIRMAN

Encl. 
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SUMMARY OF ACTIVITIES—COMMITTEE ON SCIENCE AND TECHNOLOGY

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MR. GORDON, from the Committee on Science and Technology, submitted the following

R E P O R T

HISTORY OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

The Committee on Science has its roots in the intense reaction to the Soviet launch of Sputnik on October 4, 1957. Early in 1958 Speaker Sam Rayburn convened the House of Representatives, and the first order of the day was a resolution offered by Majority Leader John McCormack of Massachusetts. It read, “Resolved that there is hereby created a Select Committee on Astronautics and Space Exploration. . .”

The Select Committee performed its tasks with both speed and skill by writing the Space Act creating the National Aeronautics and Space Administration (NASA) and chartering the permanent House Committee on Science and Astronautics, now known as the Committee on Science, with a jurisdiction comprising both science and space.

The Science and Astronautics Committee became the first standing committee to be established in the House of Representatives since 1946. It was also the first time since 1892 that the House and Senate acted to create a standing committee in an entirely new area.

The Committee officially began on January 3, 1959, and on its 20th Anniversary the Honorable Charles Mosher said the Committee “was born of an extraordinary House-Senate joint leadership initiative, a determination to maintain American preeminence in science and technology. . .”
The formal jurisdiction of the Committee on Science and Astronautics included outer space—both exploration and control—astronautical research and development, scientific research and development, science scholarships, and legislation relating to scientific agencies, especially the National Bureau of Standards, NASA, the National Aeronautics and Space Council, and the National Science Foundation.

The Committee retained this jurisdiction from 1959 until the end of the 93rd Congress in 1974. While the Committee's original emphasis in 1959 was almost exclusively astronautics, over this 15-year period the emphasis and workload expanded to encompass scientific research and development in general.

In 1974, a Select Committee on Committees, after extensive study, recommended several changes to the organization of the House in H.Res. 988, including expanding the jurisdiction of the Committee on Science and Astronautics, and changing its name to the Committee on Science and Technology.

Jurisdiction over energy, environmental, atmospheric, civil aviation R&D, and National Weather Service issues was added to the general realm of scientific research and development.

In addition to these legislative functions, the Committee on Science and Technology was assigned a “special oversight” function, giving it the exclusive responsibility among all Congressional standing committees to review and study, on a continuing basis, all laws, programs, and government activities involving federal non-military research and development.

In 1977, with the abolition of the Joint Committee on Atomic Energy, the Committee was further assigned jurisdiction over civilian nuclear research and development, thereby rounding out its jurisdiction for all civilian energy R&D.

A committee's jurisdiction gives it both a mandate and a focus. It is, however, the committee's chairman that gives it a unique character. The Committee on Science and Technology has had the good fortune to have nine very talented and distinctly different chairmen, each very creative in his own way in directing the Committee's activities.

Representative Overton Brooks was the Science and Astronautics Committee's first chairman, and was a tireless worker on the Committee's behalf for the two and one-half years he served as Chairman.

When Brooks convened the first meeting of the new committee in January of 1959, Committee Member Ken Hechler recalled, “There was a sense of destiny, a tingle of realization that every member was embarking on a voyage of discovery, to learn about the unknown, to point powerful telescopes toward the cosmos and unlock secrets of the universe, and to take part in a great experiment.” With that spirit the Committee began its work.

Brooks worked to develop closer ties between the Congress and the scientific community. On February 2, 1959, opening the first official hearing of the new Committee, Chairman Brooks said, “Although perhaps the principal focus of the hearings for the next several days will be on astronautics, it is important to recognize that

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1 Now named the National Institute of Standards and Technology (NIST) (P.L. 100–418, Title V, Part B, Subpart A, Sections 5111 through 5163, enacted August 23, 1988.)
this committee is concerned with scientific research across the board.” And so, from the beginning, the Committee was concerned with the scope of its vision.

Overton Brooks died of a heart attack in September of 1961, and the chairmanship of the Committee was assumed by Representative George Miller of California.

Miller, a civil engineer, was unique among Members of Congress who rarely come to the legislature with a technical or scientific background. He had a deep interest in science, and his influence was clearly apparent in the broadening of the charter of the National Science Foundation and the establishment of the Office of Technology Assessment. He pioneered in building strong relationships with leaders of science in other nations. This work developed the focus for a new subcommittee established during his chairmanship, known as the Subcommittee on Science, Research and Development.

Just a few months before Miller became Chairman, President John F. Kennedy announced to a joint session of Congress the national commitment to land a man on the Moon and return him safely to Earth before the end of the decade. Thus, during Miller’s 11-year tenure as Chairman, the Committee directed its main efforts toward the development of the space program.

Chairman Miller was not reelected in the election of 1972, so in January of 1973, Representative Olin E. Teague of Texas took over the helm of the Committee. Teague, a man of directness and determination, was a highly decorated hero of the second World War. He was a long-standing Member of Congress and Chairman of the Veterans Committee before assuming the chairmanship of the Science and Technology Committee.

Throughout the 1960's and early 1970's, Teague chaired the Science Committee’s Manned Space Flight Subcommittee, and in that capacity firmly directed the efforts to send a man to the Moon.

As Chairman of the Committee, Teague placed heavy emphasis on educating the Congress and the public on the practical value of space. He also prodded NASA to focus on the industrial and human applications of the space program.

One of Teague’s first decisions as Chairman was to set up a Subcommittee on Energy. During his six-year leadership of the Committee, energy research and development became a major part of the Committee’s responsibilities.

In 1976, Chairman Teague saw the fruition of three years of intensive committee work to establish a permanent presence for science in the White House. The Office of Science and Technology Policy was established with a director who would also serve as the President’s science advisor.

Throughout his leadership, he voiced constant concern that the complicated technical issues the Committee considered be expressed in clear and simple terms so that Members of Congress, as well as the general public, would understand the issues.

After six years as Chairman, Teague retired from the Committee and the Congress due to serious health problems and was succeeded as Chairman by Representative Don Fuqua of Florida.

Fuqua became Chairman on January 24, 1979, at the beginning of the 96th Congress.
Don Fuqua came to the Congress after two terms in the Florida State Legislature and was, at age 29, the youngest Democrat in Congress when he was elected in 1962.

Fuqua's experience on the Committee dated back to the first day of his Congressional service. Since 1963, he served as a Member of the Committee's Manned Space Flight Subcommittee. When Olin Teague became Chairman of the Full Committee in 1973, Fuqua took Teague's place as Chairman of the Subcommittee.

As the Subcommittee Chairman, he was responsible for major development decisions on the Space Shuttle and the successful Apollo-Soyuz link-up in space between American astronauts and Soviet cosmonauts. Later, the Subcommittee’s responsibility was expanded to cover all other NASA activities and was renamed the Subcommittee on Space Science and Applications.

As Chairman of the Committee, Fuqua’s leadership could be seen in the expansion of committee activities to include technological innovation, science and math education, materials policy, robotics, technical manpower, and nuclear waste disposal. He worked to strengthen the Committee’s ties with the scientific and technical communities to assure that the Committee was kept abreast of current developments, and could better plan for the future.

During the 99th Congress, the Science and Technology Committee, under Fuqua’s chairmanship, carried out two activities of special note.

- The Committee initiated a study of the Nation’s science policy encompassing the 40-year period between the end of the second World War and the present. The intent was to identify strengths and weaknesses in our nation’s science network. At the end of the 99th Congress, Chairman Fuqua issued a personal compilation of essays and recommendations on American science and science policy issues in the form of a Chairman’s Report.
- The second activity was a direct outgrowth of the Space Shuttle “Challenger” accident of January 28, 1986. As part of the Committee’s jurisdictional responsibility over all the NASA programs and policies, a steering group of Committee Members, headed by Ranking Minority Member Robert Roe, conducted an intensive investigation of the Shuttle accident. The Committee’s purpose and responsibility were not only the specific concern for the safe and effective functioning of the Space Shuttle program, but the larger objective of insuring that NASA, as the Nation’s civilian space agency, maintain organizational and programmatic excellence across the board.

Chairman Fuqua announced his retirement from the House of Representatives at the termination of the 99th Congress. He served 24 years on the Committee on Science and Technology and eight years as its Chairman.

Congressman Robert A. Roe of New Jersey, a long-time Member of the Committee, became its new Chairman at the beginning of the 100th Congress. Congressman Roe was trained as an engineer and brought that broad knowledge and understanding to bear on the Committee’s issues from the first day of his tenure.
Congressman Roe's first official act as Chairman was to request a change in the Committee's name from the Committee on Science and Technology to the Committee on Science, Space, and Technology. This change was designed not only to reflect the Committee's broad space jurisdiction, but also to convey the importance of space exploration and development to the Nation's future.

In the 100th Congress, under Chairman Roe's stewardship, the Committee kept close scrutiny over NASA's efforts to redesign and reestablish the space shuttle program. The successful launch of the Shuttle Discovery in September, 1988 marked America's return to space after 32 months without launch capability.

The vulnerability of having the Nation's launch capability concentrated singularly in the Space Shuttle, and the rapid increase of foreign competition in commercial space activities, precipitated strong committee action to help ensure the competitive posture of the Nation's emerging commercial launch industry.

Chairman Roe's leadership to stabilize and direct the Nation's space program led to the Committee's first phase of multi-year authorizations for research and development programs with the advent of three-year funding levels for the Space Station.

Within the national movement to improve America's technological competitiveness, Chairman Roe headed the Committee's initiative to expand and redefine the mission of the National Bureau of Standards in order for it to aid American industry in meeting global technological challenges.

The Science Committee has a long tradition of alerting the Congress and the Nation to new scientific and technological opportunities that have the potential to create dramatic economic or societal change. Among these have been recombinant DNA research and supercomputer technology. In the 100th Congress, Members of the Committee included the new breakthroughs in superconductivity research in this category.

Several long-term efforts of the Committee came to fruition during the 101st Congress. As the community of space-faring nations expanded, and as space exploration and development moved toward potential commercialization in some areas, the need arose for legal certainty concerning intellectual property rights in space. Legislation long advocated by the Science Committee defining the ownership of inventions in outer space became public law during this Congress.

Continuing the Committee's interest in long-range research programs for renewable and alternative energy sources, a national hydrogen research and development program was established. The mission of the program was to foster the economic production of hydrogen from renewable resources to its use as an alternative fuel.

At the end of the 101st Congress, the House Democratic Caucus voted Representative Roe Chairman of the Public Works and Transportation Committee.

The hallmark of Representative Roe's four-year tenure as Chairman was his articulation of science, space, and technology as the well-spring for generating the new wealth for America's future economic growth and long-term security.

At the beginning of the 102nd Congress in January, 1991, Representative George E. Brown, Jr. of southern California became the sixth Chairman of the Science, Space, and Technology Committee.
Trained in industrial physics, Brown worked as a civil engineer for many years before entering politics. Elected to the Congress in 1962, Brown was a Member of the Science, Space, and Technology Committee since 1965. During his more than two-decade tenure on the Committee before becoming its Chairman, he chaired subcommittees on the Environment, on Research and Technology, and on Transportation and Aviation R&D.

Whether from his insightful leadership as a Subcommittee Chairman or from the solitary summit of a futurist, Brown brought a visionary perspective to the Committee’s dialogue by routinely presenting ideas far ahead of the mainstream agenda.

George Brown talked about conservation and renewable energy sources, technology transfer, sustainable development, environmental degradation, and an agency devoted to civilian technology when there were few listeners and fewer converts and he tenaciously stuck to those beliefs.

Consistent with his long-held conviction that the Nation needed a coherent technology policy, Brown’s first action as Chairman was to create a separate subcommittee for technology and competitiveness issues. During his initial year as Chairman, Brown developed an extensive technology initiative which was endorsed by the House of Representatives in the final days of the 102nd Congress. The work articulated Brown’s concept of a partnership between the public and private sectors to improve the Nation’s competitiveness.

The culmination of the 102nd Congress saw Brown’s persistent efforts to redirect our national energy agenda come to fruition. The first broad energy policy legislation enacted in over a decade included a strong focus on conservation, renewable energy sources, and the expanded use of non-petroleum fuels, especially in motor vehicles.

In Brown’s continuing concern to demonstrate the practical application of advances in science and technology, he instituted the first international video-conferenced meetings in the U.S. Congress. In March of 1992, Members of the Science Committee exchanged ideas on science and technology via satellite with counterparts from the Commonwealth of Independent States. This pilot program in the House of Representatives resulted in a decision to establish permanent in-house capacity for video-conferencing for the House.

As a final activity in the 102nd Congress, Brown issued a Chairman’s Report on the federally funded research enterprise. The work was intended as the starting point for a comprehensive review and revision of federal science policy currently in the planning stage.

The 1994 congressional elections turned over control of the Congress to the Republican Party. The House Republican Conference acted to change the official name of the Committee from the Committee on Science, Space, and Technology to the Committee on Science. Representative Robert S. Walker of Pennsylvania became the Science Committee’s first Republican Chairman, and the seventh Committee Chairman. Walker had served on the Science Committee since his election to Congress in 1976, and had been its ranking minority member since 1989.

Chairman Walker acted to streamline the subcommittee structure from five to four subcommittees: Basic Research; Energy and Environment; Space and Aeronautics; and Technology. This action reflected the new Congress’ mandate to increase efficiency and cut
expenses, and also reflected Walker’s personal desire to refocus the Committee’s work. Due to the reduction in the number of subcommittees and a sharper focus on the issues, the number of hearings was reduced, while the number of measures passed by the House and signed into law increased.

Chairman Walker chose to use the Full Committee venue to hold hearings exploring the role of science and technology in the future. The first hearing, *Is Today’s Science Policy Preparing Us for the Future?*, served as the basis for much of the Committee’s work during the 104th Congress.

For the first time in recent Science Committee history, the Committee and the House of Representatives passed authorizations for every agency under the Committee’s jurisdiction. To preserve and enhance the core federal role of creating new knowledge for the future, the Science Committee sought to prioritize basic research policies. In order to do so, the Committee took strong, unprecedented action by applying six criteria to civilian R&D:

1. Federal R&D efforts should focus on long-term, non-commercial R&D, leaving economic feasibility and commercialization to the marketplace.
2. All R&D programs should be relevant and tightly focused to the agencies’ missions.
3. Government-owned laboratories should confine their in-house research to areas in which their technical expertise and facilities have no peer and should contract out other research to industry, private research foundations and universities.
4. The Federal Government should not fund research in areas that are receiving, or should reasonably be expected to obtain, funding from the private sector.
5. Revolutionary ideas and pioneering capabilities that make possible the impossible should be pursued within controlled, performance-based funding levels.
6. Federal R&D funding should not be carried out beyond demonstration of technical feasibility. Significant additional private investment should be required for economic feasibility, commercial development, production and marketing.

The authorization bills produced by the Science Committee reflected those standards, thereby protecting basic research and emphasizing the importance of science as a national issue. As an indication of the Science Committee’s growing influence, the recommendations and basic science programs were prioritized accordingly.

During the 104th Congress, the Science Committee’s oversight efforts were focused on exploring ways to: make government more efficient; improve management of taxpayer resources; expose waste, fraud and abuse; and give the United States the technological edge into the 21st century.

The start of the 105th Congress brought another change in leadership to the Committee. Representative F. James Sensenbrenner, Jr., a Republican from Wisconsin, became the eighth Chairman after Chairman Walker retired from Congress. Sensenbrenner had been a Member of the Committee since 1981 and prior to his ap-
pointment as Committee head, he served as Chairman of the Sub-
committee on Space and Aeronautics.

At the start of the 105th Congress, the Speaker of the House
charged the Science Committee with the task of developing a long-
range science and technology policy. Chairman Sensenbrenner ap-
pointed the Committee’s Vice Chairman, Representative Vernon
Ehlers of Michigan, to lead a study of the current state of the Na-
tion’s science and technology policy. The National Science Policy
Study, Unlocking Our Future: Toward a New National Science Pol-
icy, was unveiled in September 1998 and was endorsed by the
House on Oct. 8, 1998. The Science Policy Study continues to serve
as a policy guide to the Committee, Congress and the scientific
community.

The Science Committee played a crucial role in numerous issues
of national and international significance during Chairman Sensen-
brenner’s tenure. Acting in accordance with the Committee’s juris-
diction over climate change issues, Chairman Sensenbrenner was
chosen by the Speaker of the House to lead the U.S. delegation to
the Kyoto (December, 1997), Buenos Aires (November, 1998), and
The Hague (November, 2000) global warming conferences. Under
Chairman Sensenbrenner’s leadership, the Committee examined
the science supporting the Kyoto Protocol and the economic impacts
the treaty could have on the Nation.

Much of the world anxiously awaited midnight of January 1,
2000 to see if the Year 2000 (Y2K) computer problem would cause
the catastrophe that some had predicted. The Science Committee
through the Subcommittee on Technology, chaired by Representa-
tive Constance Morella of Maryland, held its first hearing on the
Y2K problem in 1996 and held or participated in over 30 hearings
on the subject. The Committee’s aggressive oversight pushed fed-
eral agencies to meet their deadlines to ensure the safety and well
being of American citizens. Thankfully, the U.S. and the world ex-
perienced very minor problems associated with the Y2K rollover.

Over many years, and during the tenure of several chairmen, the
Science Committee closely monitored development of the Inter-
national Space Station. In October of 2000, a crew of American and
Russian astronauts became the first inhabitants of the space sta-
tion.

One of Chairman Sensenbrenner’s priorities was to achieve a
steady and sustained growth in federal R&D investments. During
his tenure, funding for civilian federal R&D increased by 39 per-
cent. Funding for the National Science Foundation increased 23
percent, including its highest ever appropriation in FY 2001.

The start of the 107th Congress brought another change in the
Committee’s leadership. Representative Sensenbrenner was elected
Chairman of the Judiciary Committee and on January 3, 2001,
Representative Sherwood L. Boehlert from New York became the
new Chairman of the Committee on Science.

Boehlert had served on the Science Committee since first taking
office in 1983 and had earned a reputation for independence, mod-
eration and thoughtful leadership. In his first speech as Chairman,
Boehlert pledged to “build the Science Committee into a significant
force within the Congress,” and “to ensure that we have a healthy,
sustainable, and productive R&D establishment—one that educates
students, increases human knowledge, strengthens U.S. competi-
tiveness and contributes to the well-being of the Nation and the world.”

With those goals in mind, Boehlert laid out three priorities for the Committee—“The Three E’s”—science and math education, energy policy, and the environment—three areas in which Boehlert believed the resources and expertise of the scientific enterprise could be brought to bear on issues of national significance.

Boehlert also reorganized the Subcommittees to reflect these new priorities. The four Subcommittees became Research; Energy; Environment, Technology, and Standards; and Space and Aeronautics.

Unexpected events in our nation’s history—the terrorist attacks of September 11, 2001 and the loss of the Space Shuttle Columbia on February 1, 2003—would also focus the Committee’s attention on preventing future terrorist attacks and charting a new course for human space exploration.

The Committee played a central role in the establishment of the new Department of Homeland Security (DHS), which represented the largest reorganization of the Federal Government since the creation of the Department of Defense in 1947. Because of the Committee’s tenacious efforts, the final legislation creating the new Department, signed into law on November 22, 2002, included a Science and Technology Directorate and a Homeland Security Advanced Research Projects Agency, the two entities within DHS tasked with putting our nation’s scientific ingenuity to work at protecting the American people.

Heeding Chairman Boehlert’s admonition that “the War on Terrorism, like the Cold War, will be won in the laboratory as much as on the battlefield,” the Science Committee also worked to ensure that agencies throughout the Federal Government were investing in the science and technology necessary to combat terrorism over the long-term.

One area of particular concern to Chairman Boehlert was the vulnerability of the Nation’s power grid, financial institutions and other critical infrastructures to a cyber attack. To strengthen our nation’s cyber security efforts, Boehlert authored the Cyber Security Research and Development Act, which was signed into law by President Bush on November 27, 2002.

Under Boehlert’s leadership, the Committee also took the lead in responding to the concerns of family members of September 11th victims regarding the investigation into the collapse of the World Trade Center. After two high-profile hearings into the matter, the Committee introduced legislation to enable the government to respond more quickly to building failures and to overcome the problems that plagued the World Trade Center investigation. The Committee’s legislation, signed into law on October 1, 2002, designated the National Institute of Standards and Technology as the lead agency for all future building failure investigations.

The Committee also held hearings on how to strike the proper balance between the need for openness to conduct research successfully and the need for secrecy to protect homeland security. The Committee was particularly concerned about the significant delay in the processing of student visas following 9/11 and worked closely with the Administration to streamline the application process and reduce wait times for foreign researchers.
In addition to its efforts to shape the Department of Homeland Security, the Committee also had several legislative victories in the areas of research and education policy. A signature piece of legislation from the 107th Congress, the National Science Foundation Authorization Act, was signed into law in December 2002, authorizing the doubling of the agency’s budget over 10 years. The bill also gave additional focus to the National Science Foundation’s (NSF’s) education programs and set up a process for establishing priorities for large science projects.

Less than two months into the 108th Congress, the Space Shuttle Columbia, with her crew of seven, broke apart during re-entry into Earth’s atmosphere. The Committee held several high profile hearings into the cause of the accident and exercised close oversight of the proceedings of the Columbia Accident Investigation Board (CAIB), the independent investigative body convened by the National Aeronautics and Space Administration (NASA) to determine the cause of the accident.

The Columbia accident prompted President George W. Bush to issue a new vision for NASA that calls for the return of humans to the Moon and future manned mission to Mars and beyond. Following the President’s announcement, the Committee held hearings and numerous briefings to evaluate his exploration plan. Chairman Boehlert applauded the President for giving NASA a clear vision for the future, but also raised questions about the funding of the proposal and about its potential impact on NASA’s work in Space and Earth Science and in aeronautics.

Determined to strike the proper balance between NASA’s human exploration programs and its science and aeronautics programs, the Committee drafted an authorization bill for NASA that formally endorsed the President's exploration initiative, dubbed the Vision for Space Exploration, while also ensuring that NASA remains a multi-mission agency by requiring robust programs in Earth science, space science, and aeronautics. By an overwhelming vote of 383 to 15, the House of Representatives endorsed the Committee’s blueprint for the future direction of NASA and, on December 30, 2005, the bill was signed into law.

President Bush also signed into law Science Committee bills that allowed NASA to adapt to the workforce challenges of the 21st Century and promoted the development of the emerging commercial human space flight industry. The NASA Flexibility Act of 2004, introduced by Chairman Boehlert, gave NASA new personnel tools to attract and retain a top-notch technical workforce. The Commercial Space Launch Amendments Act of 2004, introduced by Space and Aeronautics Subcommittee Chairman Dana Rohrabacher of California, established a regulatory regime within the Federal Aviation Administration to encourage the development of the commercial human space flight industry, while providing information to the public on the inherent risks in space tourism and limiting that risk, as appropriate.

Following the recommendation of reports on ocean policy, the Committee passed an “organic act” for the National Oceanic and Atmospheric Administration (NOAA) that would formally establish the agency in law and clearly define its role and responsibilities. The House passed the bill, which was introduced by Representative Vernon J. Ehlers of Michigan, the Chairman of the Subcommittee
on Environment, Technology, and Standards, in September 2006, but the legislative clock ran out before it could be enacted into law.

One of Chairman Boehlert's signature accomplishments in the 109th Congress was elevating the issue of U.S. economic competitiveness to the forefront of domestic policy discussions. He and Ranking Minority Member Bart Gordon of Tennessee were among those who requested the 2005 National Academy of Sciences report, *Rising Above the Gathering Storm*, which recommended increased investment in research and education.

On December 7, 2005, Chairman Boehlert, along with Representative Ehlers and Representative Frank Wolf of Virginia, hosted a day-long Innovation Summit at the Department of Commerce that brought together more than 50 chief executive officers and university presidents to discuss the Nation’s economic challenges with top Administration officials, including the secretaries of Education, Energy, Commerce and Labor.

The Committee's efforts helped pave the way for President Bush's American Competitiveness Initiative (ACI), announced in the 2006 State of the Union Address. The ACI proposed doubling the budgets of NSF, the National Institute of Standards and Technology's laboratory programs, and the Department of Energy's Office of Science over 10 years.

The Committee also worked to establish a research regime to help promote the development of nanotechnology, which was estimated by the National Science Foundation to become a $1 trillion industry within a decade. Recognizing the enormous economic potential of nanotechnology, Chairman Boehlert authored the *21st Century Nanotechnology Research and Development Act*, signed into law in December 2003, which authorized increased funding and established a coordinated interagency program to carry out nanotechnology research.

Recognizing that the full economic potential of nanotechnology will only be realized if the public fully accepts the technology, the Committee also held several hearings on the potential environmental, health, and safety implications of nanotechnology and pressed the Administration to devote a greater share of research and development funding to addressing these areas of concern.

Central to the Nation's ability to compete is its ability to meet its energy demands, and the Science Committee took an active role in promoting the development of alternative energy sources. The Committee authored key provisions in the *Energy Policy Act*, enacted in 2005, that authorized research and development of clean, domestically produced renewable energy sources. Representative Bob Inglis of South Carolina, Chairman of the Subcommittee on Research, also introduced the *H-Prize Act*, which called for the establishment of a national prize competition to summon America's best and brightest minds to the challenge of developing the technical breakthroughs that would make hydrogen vehicles technically and economically practical.

In November 2006, the Democratic Party regained the majority of the House of Representatives. The Democratic Caucus agreed to change the name of the Committee from the Committee on Science to the Committee on Science and Technology. This was previously the name of the Committee from the 93rd to the 99th Congress. Representative Bart Gordon became the Chairman of the newly re-
named Committee at the start of the 110th Congress. Gordon had served as the ranking minority member of the Committee since the 108th Congress.

One of Chairman Gordon’s first acts was to reorder the subcommittee structure of the Committee. In the 110th Congress there were five subcommittees of the Committee on Science and Technology: Energy and Environment; Technology and Innovation; Research and Science Education; Space and Aeronautics; and, Investigations and Oversight. The renewal of the Investigations and Oversight Subcommittee after a 12 year absence reflected the new Congress’ focus on ethics and oversight of federal programs.

Under Chairman Gordon’s leadership, the Committee on Science and Technology embarked on an aggressive agenda for the 110th Congress. The Chairman’s early focus was on implementation of the recommendations of the National Academy of Sciences from their report, *Rising Above the Gathering Storm*. This report, which was requested in 2005 by then ranking minority member Gordon and Chairman Boehlert, outlined steps the Federal Government needed to take to ensure the competitiveness of America in the 21st Century. Included in these recommendations were calls for additional teacher training in the math and science fields, scholarships to math and science college students who pursue teaching careers, increased funding for research and development, and the creation of a high-risk high-reward energy research agency within the Department of Energy modeled after the Defense Advanced Research Projects Agency (DARPA) at the Department of Defense. These recommendations were translated into legislation by the Committee, and eventually became law in the form of the *America COMPETES Act* (the *America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act*).

Another early focus of the Committee was on the topic of energy. The Committee moved numerous bills during the first session of the 110th Congress, and these individual pieces were eventually incorporated into an omnibus energy bill entitled the *Energy Independence and Security Act of 2007* (EISA). The Committee’s contributions to this law included legislation on research, development, and demonstration in the areas of biofuels, solar energy, marine energy, geothermal energy, carbon sequestration, and energy storage. EISA also contained stringent new efficiency standards and automobile fuel efficiency standards.

The Committee also devoted considerable energy into oversight and reauthorization of NASA. This culminated in a one year reauthorization of the agency. The NASA reauthorization mandated that the agency take no steps that would preclude flying the Space Shuttle past 2010 until after the new President had a chance to evaluate the status of the agency. In addition to the agency’s base authorization levels, the bill authorized an additional one billion dollars to accelerate development of the Crew Exploration Vehicle, which was the follow-on human space transportation system to the Space Shuttle. Finally, the 2008 authorization increased funding for aeronautics research at the agency.

During the 110th Congress the Committee also passed several other pieces of legislation. The *Methamphetamine Remediation Research Act of 2007* task ed EPA to develop new detection and reme-
diation technologies and standards for cleanup contaminated methamphetamine production sites. The U.S. Fire Administration Reauthorization Act of 2008 reauthorized programs at the Administration and added programs focused on fires at the wild land-urban interface. Finally, the Committee passed the National Sea Grant College Program Amendments Act of 2008, in conjunction with the Natural Resources Committee. There were numerous other pieces of legislation which were enacted that the Committee had jurisdictional interests in, including: Implementing Recommendations of the 9/11 Commission Act of 2007; National Defense Authorization Act for Fiscal Year 2008; Consolidated Natural Resources Act of 2008; Food, Conservation, and Energy Act of 2008; Higher Education Opportunity Act; Great Lakes Legacy Reauthorization Act of 2008; and, Duncan Hunter National Defense Authorization Act for Fiscal Year 2009.

Chairman Gordon’s focus on competitiveness continued in the 111th Congress, with many of the activities of the Committee focused on reauthorization of the America COMPETES Act. Other issues on which the Committee focused include: water use and conservation; climate research and monitoring; energy research, development, demonstration, and commercial application; and, national space policy.

Reauthorization of the America COMPETES Act involved the combined work of the Research and Science Education, Technology and Innovation, and Energy and Environment Subcommittees, along with the full committee, in holding 26 hearings, three subcommittee markups, and a full committee markup. The primary focus of the reauthorization effort was to maintain the doubling paths of the National Science Foundation, the National Institute of Standards and Technology, and the Department of Energy’s Office of Science, and greatly expand the newly formed Advanced Research Projects Agency–Energy. In addition, the bill focused new efforts on innovation including Department of Commerce programs creating regional innovation clusters around the United States and providing innovative technology loan guarantees to small and medium sized manufacturers. A number of complementary and related measures were included in H.R. 5116, the America COMPETES Reauthorization Act of 2010, including: H.R. 554, the National Nanotechnology Initiative Amendments Act of 2009; H.R. 957, the Green Energy Education Act of 2009; H.R. 1144, the Fulfilling the Potential of Women in Academic Science and Engineering Act; H.R. 1709, the STEM Education Coordination Act of 2009; and, H.R. 2020, the Networking and Information Technology Research and Development Act of 2009.

The Committee on Science and Technology also found itself at the center of the policy debate concerning NASA in the 111th Congress. In February of 2010, the President submitted a budget request with dramatic changes for NASA’s human spaceflight program. The primary elements of this plan included the cancellation of the Bush-era Constellation program to return astronauts to the Moon, an increased investment in space technology, and outsourcing the task of transporting NASA astronauts to and from the International Space Station to the nascent “commercial” human spaceflight industry. The plan was met with skepticism in Congress, and the Committee spent the Spring and early Summer of
2010 holding a number of hearings on the topic. These culminated in the Committee reporting H.R. 5781, the National Aeronautics and Space Administration Act of 2010. H.R. 5781 differed in many key aspects from the Administration’s plan, most notably in continuing the development of a Government owned launch capability and a reduction on the funding for “commercial” crew development. Before H.R. 5781 was considered by the House, the Senate passed their version of the NASA Authorization, S. 3729. The Senate’s bill also authorized development of a Government owned launch vehicle, but differed from the House bill in mandating an additional Space Shuttle flight in 2011 and devoting more resources to “commercial” crew development. The House and Senate were unable to come to an agreement on a compromise bill text, and sensing that time was running out on the fiscal year, Chairman Gordon ultimately supported passage of S. 3729.

In the first session of the 111th Congress, the Committee devoted considerable attention to legislation addressing energy and environmental issues. Early in the Congress, the Committee moved H.R. 1580, the Electronic Waste Research and Development Act. This bill sought to address, through research and standards, the significant and growing problems associated with the waste stream associated with electronic devices. The Committee also marked up a bill to establish a National Climate Service to coordinate Federal climate research and monitoring activities, and this bill eventually passed the House as part of a large climate related bill: H.R. 2454, the American Clean Energy and Security Act of 2009. Energy bills which the Committee moved in the 111th Congress include measures relating to: gas turbine efficiency, wind and solar power, and advanced vehicle technologies.

Another area of focus for Chairman Gordon was on the topic of water. Despite water being an increasingly precious and valuable resource, Chairman Gordon recognized that Federal efforts at water conservation and use were fractured among several agencies with little overall coordination. H.R. 1145, the National Water Research and Development Initiative Act of 2009 sought to remedy this situation by requiring coordination of the Federal government’s water research and development efforts. The Chairman also addressed the important energy-water nexus in H.R. 3598, the Energy and Water Research Integration Act. Water use and availability and energy production are inextricably intertwined, and H.R. 3598 required the Department of Energy to pay greater attention to this issue in its research efforts. The Committee also moved three additional water-related bills in the 111th Congress: H.R. 469, the Produced Water Utilization Act of 2009 which was sponsored by Ranking Member Ralph Hall; H.R. 631, the Water Use Efficiency and Conservation Research Act which was sponsored by Jim Matheson; and, H.R. 3650, the Harmful Algal Blooms and Hypoxia Research and Control Amendments Act of 2010 which was sponsored by Energy and Environment Subcommittee Chairman Brian Baird.

On April 20, 2010, the British Petroleum owned oil rig “Deepwater Horizon” exploded and sank, which resulted in a months long release of millions of barrels of oil in one of the greatest environmental catastrophes in the country’s history. The Committee responded by moving two bills: H.R. 2693, the Oil Pollution Research
and Development Program Reauthorization Act of 2010 and H.R. 5716, the SAFER Oil and Natural Gas Drilling Technology Research and Development Act. H.R. 2693 reorganized and expanded the existing interagency oil pollution research and development efforts within the Federal government. With H.R. 5716, the Committee addressed the issue of developing safer oil and gas drilling technologies by altering an existing oil and gas research and development program to focus heavily on the issue of safety.
Chapter I—Legislative Activities of the Committee on Science and Technology

1.1—P.L. 111–5, AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (H.R. 1)

Background and Summary of Legislation

P.L. 111–5, the American Recovery and Reinvestment Act of 2009, was a comprehensive law aimed at addressing the severe economic downturn in the United States. Its principal provisions involved a series of tax cuts, infrastructure spending, and extension of unemployment benefits. The law appropriated significant resources to programs within the Committee on Science and Technology’s jurisdiction, including: the National Science Foundation, the National Aeronautics and Space Administration, the National Institute of Standards and Technology, and the Department of Energy.

P.L. 111–5 also legislated on a select number of areas within the Committee’s jurisdiction, including the area of health information technology. In the 110th Congress, Chairman Gordon introduced H.R. 2406, the Healthcare Information Technology Enterprise Integration Act, which established an initiative for healthcare information enterprise integration at the National Institute of Standards and Technology (NIST). It directed NIST to work with the private sector to establish technical standards for healthcare IT for Federal agencies to promote the interoperability of Federal healthcare information systems. It created a program of grants for universities and consortia to conduct multidisciplinary research in healthcare IT research centers, directed the National High-Performance Computing Program to coordinate Federal research and development programs related to healthcare IT, and further directed NIST to establish a task force to develop recommendations on standards harmonization. Finally, it authorized $8 million for NIST in FY2009 and FY2010. On November 15, 2007, the Committee reported the bill to the House (H. Rept. 110–451), but no further action was taken on the measure.

Efforts continued in the 110th Congress to craft a comprehensive healthcare information technology bill involving the Committees on Ways and Means, Energy and Commerce, and Science and Technology. The result of those efforts culminated in Title XIII of P.L. 111–5, entitled “Healthcare Information Technology.” Title XIII created a comprehensive Federal effort to develop and implement modern information technology across the healthcare industry. The Science and Technology Committee had shared jurisdiction over Subtitle A, Subtitle B and Part I of Subtitle C of Title XIII. Subtitle A deals with the development of health information technology standards, adoption of those standards, promotion of those standards, and coordination of these actions by entities like the HIT
Standards Committee created by section 3003. Subtitle B addressed research and development relating to health information technology and testing of the technology by NIST. Among other things, Part I of Subtitle C established a health information technology architecture program, provided for implementation assistance, created a Health Information Technology Research Center, and established a health information technology professional education program.

In addition to the Health Information Technology components of P.L. 111–5, the Committee had jurisdiction over two energy related sections of the act: Section 405, Amendments to Title XIII of the Energy Independence and Security Act of 2007 (EISA) and Section 406, Temporary Program for Rapid Deployment of Renewable Energy and Electric Power Transmission Projects. Section 405 contained provisions relating to smart grid demonstration projects. In addition, the section required all energy demonstration projects funded under the section to “utilize open protocols and standards.” Section 406 provided for loan guarantees for renewable energy projects that can be rapidly deployed. The loan guarantees are to be specified for biofuel projects “at the pilot or demonstration scale”.

Legislative History

On January 26, 2009, Rep. David Obey (D–WI), Chairman of the Committee on Appropriations, introduced H.R. 1, which was referred to the Committees on Appropriation and Budget. On January 27 and 28, 2009, H.R. 1 was considered by the House and passed by: Y–244, N–188 (Roll Call No. 46).

H.R. 1 was received in the Senate on January 29, 2009. H.R. 1 was considered by the Senate on February 3, 4, 5, 6, 7, 9, and 10, 2009, and ultimately passed the Senate on February 10, 2009, with an amendment by: Y–61, N–37 (Record Vote No. 61). The Senate requested a conference and appointed conferees.

On February 10, 2009, the House disagreed with the Senate amendment to H.R. 1, agreed to a conference, and appointed conferees. On February 12, 2009 the conference report (H. Rept. 111–16) was filed. The House considered and passed the conference report on February 13, 2009, by: Y–246, N–183, 1 Present (Roll Call No. 70). The Senate passed the conference report on February 13, 2009, by: Y–60, N–38 (Record Vote No. 64). It was signed into law by the President on February 17, 2009, and became Public Law No. 111–5.

1.2—P.L. 111–11, OMNIBUS LAND MANAGEMENT ACT OF 2009 (H.R. 146)

Background and Summary of Legislation

P.L. 111–11, the Omnibus Land Management Act of 2009, was a consolidated bill primarily composed of elements dealing with Federal lands and water resources. Several portions of this bill were within the jurisdiction of the Committee on Science and Technology.
Subtitle F of Title IX, “Secure Water,” created several programs within the Departments of the Interior, Energy, Agriculture, and Commerce to more accurately assess potential future water impacts from climate change. Those programs within the Department’s of Energy and Commerce lie within the Committee’s jurisdiction.

Title XII, “Oceans,” is composed of several bills dealing with the National Oceanic and Atmospheric Administration (NOAA). Subtitle A, “Ocean Exploration,” contained two parts: Exploration and NOAA Undersea Research Program Act of 2009. These sections are very similar to the text of H.R. 366, the Ocean Research and Exploration Enhancement Act of 2009, introduced on January 9, 2009, by Representative Sam Farr, and the Senate analogue, S. 172, the NOAA Ocean Exploration and Undersea Research Program Act of 2009, introduced on January 8, 2009, by Senator Olympia Snowe. Both of these bills were similar in topic to H.R. 1834, the National Ocean Exploration Program Act, from the 110th Congress. H.R. 1834 implemented a key recommendation of the U.S. Commission on Ocean Policy to provide specific and separate authorizations for the exploration and undersea research programs within NOAA. The purpose of H.R. 1834 was to authorize the national ocean exploration program and the national undersea research program within the National Oceanic and Atmospheric Administration. The authorizations further strengthen NOAA’s standing as the preeminent civilian federal ocean agency by granting the agency explicit authority to conduct scientific research that directly contributes to increasing scientific knowledge of the world’s oceans. The legislation addressed the national need to develop and advance new innovations in oceanographic research, communication and navigation technologies to support ocean exploration and science. Additionally, the legislation emphasized the importance of outreach and public education to ensure that future scientific discoveries and benefits are disseminated to decision-makers in both the public and private sectors, and conveyed to the general public to increase public awareness and appreciation of the Great Lakes and the world’s oceans and their importance to our economic and environmental well-being. H.R. 1834 was introduced on March 29, 2007, by Representative Saxton. The bill was referred to the Committee on Science and Technology, and in addition to the Committee on Natural Resources and the Committee on Armed Services. On October 10, 2007, the Subcommittee on Energy and Environment met to consider H.R. 1834. No amendments were offered. The Subcommittee ordered the bill to be reported to the Committee by voice vote. The Committee met to consider H.R. 1834 on October 24, 2007. Representative Lampson offered a manager’s amendment, which was adopted by a voice vote. The Committee ordered the measure reported, as amended, by a voice vote. On December 18, 2007, the Committee reported H.R. 1834 to the House (H. Rept. 110–311, Part II). The House suspended the rules and passed H.R. 1834 on a recorded vote of 352–49 on February 14, 2008. On February 25, 2008, H.R. 1834 was received in the Senate and placed on the Senate Legislative Calendar under General Orders. No further legislative action was taken on H.R. 1834.

Subtitle B of Title XII of H.R. 146, the Ocean and Coastal Mapping Integration Act, was similar to H.R. 2400, the Ocean and
Coastal Mapping Integration Act, from the 1110th Congress. H.R. 2400 was introduced by Delegate Bordallo on May 21, 2007, and referred to the Committee on Natural Resources, and the Committee on Science and Technology. On July 23, 2007, the Committee was discharged of H.R. 2400. On July 23, 2007, the House suspended the rules and passed H.R. 2400 by voice vote. On July 24, 2007, H.R. 2400 was received in the Senate and referred to the Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 2400. H.R. 2400 directed the Administrator to convene or use an existing interagency committee on ocean and coastal mapping to implement such program and to coordinate federal ocean and coastal mapping and surveying activities with other federal efforts (including the Digital Coast, Geospatial One-Stop, and the Federal Geographic Data Committee), international mapping activities, coastal states, user groups, and nongovernmental entities. It also authorized the Administrator to convene an ocean and coastal mapping advisory panel consisting of representatives from nongovernmental entities to provide input regarding activities of the committee. It also directed the Administrator to develop a plan for an integrated ocean and coastal mapping initiative within NOAA that: (1) identifies all ocean and coastal mapping programs within NOAA, establishing priorities; (2) encourages the development of innovative ocean and coastal mapping technologies and applications through research and development (R&D) cooperative agreements at joint or cooperative research institutes or centers and with other nongovernmental entities; and (3) documents available and developing technologies, best practices in data processing and distribution, and leveraging opportunities with other federal agencies, coastal states, and nongovernmental entities. It authorized the Administrator to establish joint ocean and coastal mapping centers (including a joint hydrographic center) of excellence in institutions of higher education to conduct specified activities, including: (1) research and development of innovative ocean and coastal mapping technologies, equipment, and data products; and (2) mapping of the U.S. outer continental shelf.

Subtitle C of Title XII, the Integrated Coastal and Ocean Observation System Act of 2009, was largely derived from H.R. 2342, the National Integrated Coastal and Ocean Observation Act of 2007, from the 110th Congress. H.R. 2342 was introduced on May 16, 2007, by Representative Allen. The bill was referred the Committee on Natural Resources, and the Committee on Science and Technology. On March 31, 2008, the Committee was discharged of H.R. 2342. On March 31, 2008, the House suspended the rules and passed H.R. 2342 by voice vote. On April 1, 2008, H.R. 2342 was received in the Senate and referred to the Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 2342. H.R. 2342 directed the President to establish a National Integrated Coastal and Ocean Observation System to: (1) support national defense, marine commerce, energy production, basic and applied research, ecosystem-based marine and coastal resource management, public safety and public outreach training and education; (2) promote awareness of ocean, coastal, and Great Lakes resources; (3) improve the ability to measure,
track, explain, and predict weather and climate change and natural climate variability; (4) fulfill the plan contained in the document entitled “US Publication No. 9, The First Integrated Ocean Observing System (IOOS) Development Plan”; and (5) fulfill the nation’s international obligations to contribute to the global earth and ocean observation systems. The bill made the National Ocean Research Leadership Council responsible for coordination and long-term operations plans, policies, protocols, and standards for the System and for coordination with other earth observing activities. H.R. 2342 made the existing Interagency Working Group responsible for, among other things, implementation of operations plans and policies, budget development, identification of observation coverage gaps or capital improvements needs, data management and communication protocols and standards, observation data variables, and establishment of a competitive matching grant or other program to promote research and development of innovative observation technologies. It made the Administrator of the National Oceanic and Atmospheric Administration (NOAA) the lead federal agency for the System.

Subtitle D, Federal Ocean Acidification Research and Monitoring Act of 2009, was likewise, derivative of a bill from the 110th Congress: H.R. 4174. H.R. 4174, the Federal Ocean Acidification Research and Monitoring Act, was introduced on November 14, 2007, by Representative Allen. The bill was referred to the Committee on Science and Technology. The Subcommittee on Energy and Environment met to consider H.R. 4174 on June 18, 2008. Representatives Baird and Inglis offered an amendment in the nature of a substitute, which was adopted by voice vote. The Subcommittee reported the bill, as amended, to the Committee by voice vote. On June 25, 2008, the Committee met to consider H.R. 4174. A manager’s amendment offered by Representatives Baird and Inglis was adopted by voice vote. The Committee ordered the measure, as amended, reported by a voice vote. On July 9, 2008, the Committee on Science and Technology reported H.R. 4174 to the House (H. Rept. 110–749). The House suspended the rules and passed the bill by voice vote on July 9, 2008. On July 10, 2008, H.R. 4174 was received in the Senate and placed on the Senate Legislative Calendar under General Orders. No further legislative action was taken on H.R. 4174. H.R. 4174 established an interagency program to develop and coordinate a comprehensive plan to better understand and address the impacts of ocean acidification, to provide for assessment of ecosystem and socioeconomic impacts of ocean acidification and to provide for research on adaptation strategies to conserve marine ecosystems. National investment in a coordinated program of research and monitoring will improve understanding of ecosystem responses and provide marine resource managers the information they need to develop strategies for the protection of critical species, habitats, and ecosystems. The bill designated JSOST as the coordinating body for interagency activities on ocean acidification and required JSOST to involve the extramural ocean community in the development of the plan, including universities, states, industry and environmental groups. The bill also authorized ocean acidification activities at the National Science Foundation and the National Aeronautics and Space Administration.
Legislative History

On January 6, 2009, Rep. Rush Holt (D–NJ) introduced H.R. 146, which was referred to the Committee on Natural Resources. The bill, as introduced, was entitled, “Revolutionary War and War of 1812 Battlefield Protection Act,” and bore little resemblance to P.L. 111–11. On March 2 and 3, 2009, H.R. 146 was considered by the House and passed by: Y–394, N–12 (Roll Call No. 91).


H.R. 146 was considered by the Senate on March 18 and 19, 2009, and H.R. 146, as amended, passed the Senate on March 19, 2009, by: Y–77, N–20 (Record Vote No. 106). The amended bill, as passed the Senate, closely resembled S. 22, as passed the Senate. H.R. 146 was received in House on March 19, 2009. On March 25, 2009, Chairman Rahall moved that the House agree to the Senate amendments to H.R. 146, and the motion was agreed to by: Y–285, N–140 (Roll Call No. 153). It was signed into law by the President on March 30, 2009, and became Public Law No. 111–11.

1.3—P.L. 111–84, NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2010 (H.R. 2647)

Background and Summary of Legislation

P.L. 111–84, the National Defense Authorization Act for Fiscal Year 2010, authorized the defense activities of the federal government, including the Department of Defense and portions of the Department of Energy. The Committee on Science and Technology had jurisdiction over provisions in both the House passed and Senate passed versions of the bill. Provisions of P.L. 111–84 over which the Committee had jurisdiction are: Section 254, Authority for National Aeronautics and Space Administration federally funded research and development centers to participate in merit-based technology research and development programs; Section 806, Treatment of non-defense agency procurements under joint programs with intelligence community; Section 819, Contract authority for advanced component development or prototype units; Section 845, Study of the use of factors other than cost or price as the predominant factors in evaluating competitive proposals for defense procurement contracts; Section 847, Extension of SBIR and STTR programs of the Department of Defense; Section 848, Extension of authority for small business innovation research Commercialization Pilot Program; Section 911, Submission and review of space science and technology strategy; and, Section 913, Management and funding strategy and implementation plan for the National Polar-Orbiting Operational Environmental Satellite System Program.
Section 254 allowed NASA’s Jet Propulsion Laboratory to perform research and development work for other agencies, including the Department of Defense. Sections 806, 819, and 845 slightly altered Department of Defense procurement rules, which also apply to NASA and the Department of Homeland Security. Section 847 extended the Department of Defense’s Small Business Innovation Research (SBIR) and Small Business Technology Transfer Research (STTR) programs through fiscal year 2010. Section 848 extended an SBIR commercialization pilot program through fiscal year 2010. Section 911 slightly altered certain aspects of an existing space science and technology strategy which the Department of Defense was tasked with formulating, and required GAO to review the strategy and report back to Congress on the review. Section 913 required the President to create a management and funding strategy for the National Polar-Orbiting Operational Environmental Satellite System Program (commonly referred to as NPOESS), which was jointly managed by the Department of Defense, the National Oceanic and Atmospheric Administration (NOAA), and NASA, and also required the President to create a plan for implementation of the strategy.

Legislative History

On June 2, 2009, Rep. Ike Skelton (D–MO), Chairman of the Committee on Armed Services, introduced H.R. 2647, which was referred to the Committee on Armed Services. On June 18, 2009, H.R. 2647 was favorably reported from the Committee on Armed Services, with an amendment.

On June 24 and 25, 2009, the House considered H.R. 2647 under a structured rule (H. Res. 572), and on June 25, 2009, the House passed H.R. 2647, as amended, by: Y–389, N–22, 1–Present (Roll Call No. 460).

H.R. 2647 was received in the Senate on July 6, 2009, and placed on the Senate Legislative Calendar. On July 23, 2009, H.R. 2647 was considered and passed, with a substitute amendment, by unanimous consent. The Senate insisted on its amendment, asked for a conference, and appointed conferees.

Message on Senate action was sent to the House on July 28, 2009. On October 6, 2009, Chairman Skelton moved that the House disagree to the Senate amendment to H.R. 2647 and agree to a conference, and the motion was agreed to by voice vote. From the Committee on Science and Technology, the Speaker appointed the following conferees for consideration of Sections 248, 819, 836, and 911 of the House bill and Sections 801, 814, 833, 834, 912, and Division F of the Senate amendment, and modifications committed to conference: Chairman Bart Gordon (D–TN), Technology and Innovation Subcommittee Chairman David Wu (D–OR), and Technology and Innovation Subcommittee Ranking Member Adrian Smith (R–NE).

On October 7, 2009, the conference report (H. Rept. 111–288) was filed. The House considered the conference report, subject to a rule (H. Res. 808), on October 8, 2009, and the report passed by: Y–281, N–146 (Roll Call No. 770). The Senate considered the conference report on October 20, 21, and 22, and the conference report passed the Senate on October 22, 2009, by: Y–68, N–29 (Record Vote No.
The bill was signed into law by the President on October 28, 2009, and became Public Law 111–84.

1.4—P.L. 111–125, TO EXTEND THE COMMERCIAL SPACE TRANSPORTATION LIABILITY REGIME (H.R. 3819)

Background and Summary of Legislation

P.L. 111–125, to extend the commercial space transportation liability regime, was a bill which extended the indemnification regime for commercial space transportation until December 31, 2012. The commercial space transportation indemnification regime was first enacted as part of P.L. 100–657, the Commercial Space Launch Act Amendments of 1988. Under this regime, the United States shall pay up to $1.5 billion, adjusted for inflation, in excess of the amount covered by liability insurance or demonstrated financial responsibility with respect to third party claims against a commercial space launch or reentry licensee, transferee, contractor, subcontractor, or customer for death, bodily injury, or property damage or loss resulting from and activity carried out under the license.

Legislative History

On October 15, 2009, Rep. Bart Gordon (D–TN), Chairman of the Committee on Science and Technology, introduced H.R. 3819, which was referred to the Committee on Science and Technology. On October 20, 2009, Chairman Gordon moved to suspend the rules and pass the bill, and the motion was agreed to by voice vote. H.R. 3819 was received in the Senate on October 21, 2009, and referred to the Committee on Commerce, Science, and Transportation. H.R. 3819 was favorably reported from the committee without amendment on December 22, 2009. On December 23, 2009, H.R. 3819 was considered and passed by the Senate by unanimous consent. It was signed into law by the President on December 28, 2009, and became Public Law No. 111–125.

1.5—P.L. 111–140, NUCLEAR FORENSICS AND ATTRIBUTION ACT (H.R. 730)

Background and Summary of Legislation

P.L. 111–140, the Nuclear Forensics and Attribution Act, directed certain nuclear forensic and attribution activities within the Department of Homeland Security. The bill amends the Homeland Security Act of 2002 to add to the mission of the Domestic Nuclear Detection Office (DNDO): 1) lead the development and implementation of the national strategic five-year plan for improving U.S. nuclear forensic and attribution capabilities; 2) establish within DNDO a National Technical Nuclear Forensics Center to centralize all federal nuclear forensics and attributions activities; and, 3) establish a National Nuclear Forensics Expertise Development Program to provide scholarships and other means to ensure faculty and students have a secure funding stream in the study of nuclear and geochemical science specialties relevant to technical nuclear forensics.
The bill also required DNDO and the other federal partners in these efforts to annually report an assessment of each department's activities and investments in support of nuclear forensics and attribution activities and specific goals and objectives accomplished during the previous year pursuant to the national strategic five-year plan.

**Legislative History**

On January 27, 2009, Rep. Adam Schiff (D–CA), introduced H.R. 730, which was referred to the Committees on Homeland Security and Foreign Affairs. H.R. 730 was similar to H.R. 2631, which was introduced and passed the House and Senate in the 110th Congress. Differences between the houses on H.R. 2631 were not resolved before the end of the 110th Congress. The Science and Technology Committee’s jurisdiction over H.R. 2631 was acknowledged in correspondence with the Committee on Homeland Security. Similarly, on March 19 and 20, 2009, Chairman Bart Gordon and Homeland Security Committee Chairman Bennie Thompson (D–MS) exchanged correspondence acknowledging the jurisdiction of the Committee on Science and Technology over H.R. 730, and agreeing to waive referral of the bill to Committee. On March 24, 2009, the bill was considered under suspension the rules, and the motion was agreed to by: Y–402, N–16 (Roll Call No. 148).

H.R. 730 was received in the Senate on March 26, 2009, and referred to the Committee on Homeland Security and Governmental Affairs. H.R. 730 was favorably reported from the committee with an amendment on November 4, 2009. On December 23, 2009, H.R. 730 was considered and passed by the Senate by unanimous consent, and the House was notified of Senate action on December 24, 2009.

On January 20 and 21, 2010, H.R. 730, as amended by the Senate, was considered by the House under suspension of the rules, and the bill passed by: Y–397, N–10 (Roll Call No. 16). It was signed into law by the President on February 16, 2010, and became Public Law No. 111–140.

1.6—P.L. 111–267, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT OF 2010 (S. 3729)

**Background and Summary of Legislation**


Shortly after the Obama Administration took power in 2009, the Administration announced a Review of United States Human Space Flight Plans and formed a committee to undertake the review. The committee, led by Norm Augustine, former CEO of Lockheed Martin, released its final report on October 22, 2009. The Augustine committee’s report determined that NASA’s existing Constellation program was so underfunded and behind schedule that meeting the program’s goals without large budget increases was not possible. The committee judged that human exploration beyond low earth orbit should be NASA’s primary human spaceflight goal.
and, within budget scenarios prescribed by the Administration, crafted several basic options to achieve this goal. Each of these options involved different destinations and tools to get there. The committee also evaluated in these options the possibility of heavily utilizing “commercial” providers of launch services.

Following the release of the Augustine committee’s report, in February of 2010, the President submitted a budget request with dramatic changes for NASA’s human spaceflight program and for NASA generally. Elements of the President’s request included termination of the Constellation program and its constituent elements, sharply increased investment in space technology development, and outsourcing the task of transporting NASA astronauts to and from the International Space Station to a “commercial” spaceflight industry. The plan was met with skepticism in Congress, and the Science and Technology Committee and the Senate Commerce, Science, and Transportation Committee spent much of the Spring and early Summer of 2010 holding a number of hearings on the topic. The Committee was unable to acquire any programmatic or budgetary analysis from the Administration which would support the drastic changes to NASA proposed in the budget request. For that reason, Chairman Gordon decided to move forward in crafting a NASA authorization which departed from the President’s budget request.

The key programmatic elements of H.R. 5781 were: the continuation of assured NASA access to low earth orbit and the International Space Station through development of a government vehicle or vehicles; development of a heavy lift launch vehicle, utilizing elements from Constellation and the Space Shuttle to the maximum extent practicable; a flexible path toward exploration beyond low earth orbit which could adapt to future budget realities; reduced funding for “commercial” human launch development, and an alteration in the funding mechanism from direct payments to a loan or loan guarantee approach; continuation of the International Space Station until at least 2020; and, increased space and aeronautics technology funding (albeit less than proposed in the President’s request). Although the programmatic elements of H.R. 5781 differed significantly from the President’s budget request, the top line authorization levels for 2011, 2012, and 2013 matched those in the budget request.

Before H.R. 5781 was considered by the House, the Senate passed S. 3729. S. 3729 differed significantly from the President’s budget request, but it also contained key differences from the House bill, including: prescriptive requirements for the development of a NASA heavy lift launch vehicle; no mandate of assured government owned access to low earth orbit; increased (relative to the House bill) funding for “commercial” human launch development; and a mandated extra flight of the Space Shuttle. Like the House bill, S. 3729 hewed to the top line numbers in the President’s budget request. Also like the House bill, S. 3729 provided significant increases in NASA’s space and aeronautics technology programs and it extended the International Space Station until 2020.

After passage of S. 3729, attempts were made to reconcile the differences between the two bills. However, those efforts were un-
successful. With the 2011 fiscal year quickly approaching, Chairman Gordon determined that moving forward with the Senate bill was necessary to provide NASA and its workforce with stability, and the House took up and passed S. 3729 without amendment.

Legislative History

On July 20, 2010, Chairman Bart Gordon (D–TN), along with Ranking Member Ralph Hall (R–TX), Space and Aeronautics Subcommittee Chair Gabrielle Giffords (D–AZ), and Space and Aeronautics Subcommittee Ranking Member Pete Olson (R–TX), introduced H.R. 5781, the National Aeronautics and Space Administration Authorization Act of 2010. On July 22, 2010, H.R. 5781 was marked up by the Full Committee, and ordered reported, amended, by voice vote. H.R. 5781 was reported to the House on July 28, 2010 (H. Rept. 111–576). No further action was taken on H.R. 5781.

On August 5, 2010, Senator John Rockefeller (D–WV), Chairman of the Commerce, Science, and Transportation Committee, introduced S. 3729, the National Aeronautics and Space Administration Authorization Act of 2010. The measure, in draft form, was previously marked up by the Commerce, Science, and Transportation Committee on July 15, 2010, and favorably ordered reported by voice vote. The written report on the measure was filed upon introduction of the bill (S. Rept. 111–278). On August 5, 2010, the Senate passed S. 3729, with amendments, by unanimous consent.

S. 3729 was received in the House on August 9, 2010, and held at the desk. On September 29, 2010, Chairman Gordon moved to suspend the rules and pass S. 3729. S. 3729 passed the House by: Y–304, N–118 (Roll Call No. 561). It was signed into law by the President on October 11, 2010, and became Public Law No. 111–267.

1.7—P.L. 111–XXX, AMERICA COMPETES REAUTHORIZATION ACT OF 2010 (H.R. 5116)

Background and Summary of Legislation

The purpose of H.R. 5116, America COMPETES Reauthorization Act of 2010, was to invest in innovation through research and development and science and mathematics education and to improve the competitiveness of the United States. It reauthorized the programs of the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy’s Office of Science, and the Advanced Research Projects Agency—Energy (ARPA–E) at the Department of Energy. The Act also authorized new innovation-focused programs at the Department of Commerce and an energy innovation hub program at the Department of Energy. Finally, the Act authorized: education and oceanic and atmospheric programs at NOAA; education programs at the Department of Energy; and, education programs at NASA.

The origin of H.R. 5116 dates back to the National Academies report, “Rising Above the Gathering Storm,” which was requested in 2005 by then Ranking Member Gordon and Chairman Boehlert. The report made several recommendations for action to ensure the competitiveness of the United States, and those recommendations
were enacted as P.L. 110–69, the America COMPETES Act or America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act. Among other things, P.L. 110–69: authorized seven year doubling paths for NSF, NIST, and the Department of Energy Office of Science; authorized science, technology, engineering, and mathematics (STEM) education programs at NSF, the Department of Education, NOAA, and NASA; and, authorized the creation of an Advanced Research Projects Agency–Energy at the Department of Energy to engage in high-risk high-reward energy related research.

In the update to the “Rising Above the Gathering Storm” report, entitled, “Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5,” the Committee headed by Norm Augustine, former Chairman of Lockheed Martin, noted that:

“Although significant progress has been made . . . the Gathering Storm effort once again finds itself at a tipping point. It is widely agreed that addressing America’s competitiveness challenge is an undertaking that will require many years if not decades; however, the requisite federal funding of much of that effort is about to terminate. In order to sustain the progress that has begun it will be necessary to (1) reauthorize the America COMPETES Act, and (2) “institutionalize” funding and oversight of the Gathering Storm recommendations . . . ”

P.L. 111–XXX sought to fulfill these objectives. The bill reauthorized NSF, NIST, and the Department of Energy Office of Science for three fiscal years. In addition, the bill reauthorized ARPA–E. P.L. 111–XXX also expanded upon the original COMPETES Act in authorizing certain competitiveness related activities at the Department of Commerce. These include loan guarantee programs for science park infrastructure and innovative technology manufacturing and a regional innovation cluster program to help spur innovation at a regional level.

Legislative History

H.R. 5116 was introduced by Representative Bart Gordon on April 22, 2010 and referred to the Science and Technology Committee and the Education and Labor Committee.

The House Education and Labor Committee discharged the bill on April 22, 2010. House Science and Technology committee met to consider the bill on April 28, 2010. The Committee agreed to report the bill to the House by voice vote. The Science and Technology Committee reported the bill, as amended, to the House on May 7, 2010 (H. Rept. 111–478, Part I).

The House considered H.R. 5116 on May 12 and 13, 2010. On May 13, 2010, Ranking Member Hall moved to recommit the bill to the Committee on Science and Technology with instructions. The motion was agreed to by: Y–292, N–126 (Roll Call No. 270). Further proceedings on the bill were postponed.

On May 18, 2010, Chairman Gordon introduced H.R. 5325, the America COMPETES Reauthorization Act of 2010. H.R. 5325 was substantially similar to H.R. 5116, with the notable exception that it was a three-year authorization rather than a five-year authorization. On May, 19, 2010, Chairman Gordon moved that the House

On May 28, 2010, H.R. 5116 was considered as unfinished business. Upon reporting the bill back to the House with the amendment specified in the motion to recommit, Chairman Gordon moved to divide the question of adoption of the amendment into each of its nine components. The question of adoption was divided and put to each portion of the amendment. Upon division, certain portions of the amendment passed and certain portions failed. The bill then passed, as amended, by: Y–262, N–150 (Roll Call No. 332).

The bill was received in the Senate on June 29, 2010 referred to the Committee on Commerce, Science, and Transportation. On December 17, 2010, the Senate Committee on Commerce, Science, and Transportation was discharged of H.R. 5116 by unanimous consent. On December 17, 2010, the bill was considered and passed the Senate, with an amendment, by unanimous consent.

On December 17, 2010, message of the Senate’s action was sent to the House. On December 21, 2010, Chairman Gordon moved that the House concur with the Senate amendment to H.R. 5116, and the bill passed by: Y–228, N–130 (Roll Call No. 659). On December XX, 2010, the bill was signed by the President and became P.L. 111–XXX.

1.8—P.L. 111–XXX, IKE SKELTON NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2011 (H.R. 6523)

Background and Summary of Legislation


H.R. 6523 included several provisions within the jurisdiction of the Committee on Science and Technology including: establishing a pilot program on collaborative energy security between the Department of Defense and the Department of Energy; modifications to defense procurement laws which also apply to NASA; an assessment and plan for critical rare earth materials; a limitation on use of authorized funds to cancel contracts related to the National Polar-Orbiting Operation Environmental Satellite System Program (NPOESS); preservation of the solid rocket motor industrial base; sustainment of the liquid rocket propulsion system industrial base; and, extension of certain transaction authority of the Secretary of Energy through 2015.

Legislative History

H.R. 6523 was introduced by Armed Services Committee Chairman Ike Skelton on December 15, 2010, and the bill was referred to the Armed Services Committee and the Budget Committee. The bill was derivative of H.R. 5136, the *National Defense Authorization Act for Fiscal Year 2011*. H.R. 5136 had previously passed the House, and in the course of that previous effort, the Committee on Science and Technology’s jurisdiction over parts of the measure was acknowledged. Chairman Skelton also acknowledged the Com-
mittee on Science and Technology’s jurisdiction over portions of H.R. 6523 in an exchange of correspondence.

On December 17, the House suspended the rules and passed H.R. 6523, as amended, by: Y–341, N–48 (Roll Call No. 650). The bill was received in the Senate on December 17, 2010. On December 22, 2010, the Senate passed H.R. 6523, with an amendment, by unanimous consent.

The bill was received in the House on December 22, 2010, and passed the House by unanimous consent. On December XX, 2010, the President signed the bill and it became Public Law 111–XXX.
Chapter II—Other Legislative Activities of the Committee on Science and Technology

2.1—H.R. 445, HEAVY DUTY HYBRID VEHICLE RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACT OF 2009

Background and Summary of Legislation

The purpose of H.R. 445 is to establish a research, development, demonstration, and commercial application program to promote research of appropriate technologies for heavy duty hybrid vehicles, and for other purposes.

Large, heavy duty trucks that rely on a diesel or gasoline internal combustion engine for power typically have relatively low fuel economy and high emissions. This is especially evident in trucks with duty-cycles that include frequent starts and stops, long periods of engine idling, or addition power for auxiliary systems such as bucket lifters, trash compactors, off-board power tools, air conditioning, refrigeration, or other work-related equipment. Switching a portion of the driving and auxiliary power loads away from the internal combustion engine to an alternate power source would enable these vehicles to realize considerable fuel savings and emissions reductions compared to conventional models. The Environmental Protection Agency (EPA) estimates that an average delivery truck using a hybrid drive system could save approximately 1,000 gallons of diesel per year compared to one with a conventional drive system.

Despite substantial investment in both the defense and commercial sectors, the cost of research and development and the final price of heavy duty hybrid vehicles remain prohibitively high, even for military applications. Consequently, there remain significant technical obstacles to development and final commercial application of these technologies that federally-sponsored R&D activities can help to overcome. Managing a comprehensive federal R&D program is complicated by the fact that there is no one-size-fits-all hybrid solution for the entire heavy duty vehicle sector. The power demands of heavy duty trucks are as varied as the applications. For example, through the course of an average drive cycle the charging and discharging of a hybrid system on a refuse truck with its frequent starts and stops, dumpster lifting, and trash compaction will be considerably different than that of a utility truck, which may idle in one place for several hours to operate a boom or other equipment. Class 8 long haul tractor trailers present an even greater challenge they seldom brake enough to charge batteries through regenerative braking. The energy storage devices and related control systems may be altogether different for each of these platforms. Future generations of heavy trucks may also include plug-in hybrid electric models that can store more electric energy in larger banks
of batteries and charge these batteries through direct connection to the electricity grid either while in operation on a jobsite or in a parking lot or garage.

The majority of federal funding for hybrid vehicle R&D has focused on passenger vehicles which far outnumber heavy trucks. However, the federal R&D portfolio should address the significant potential for fuel savings and emissions reductions through improvements in the heavy duty vehicle sector, and take advantage of the ability of this sector to deploy new technologies more quickly. The Department of Energy (DOE) has funded limited research on the hybridization of trucks, most recently through the 21st Century Truck Partnership which conducts research and development through joint public and private efforts. Other federal agencies involved in the 21st Century Truck Partnership include the Department of Defense, the Department of Transportation, and EPA. DOE does not currently offer any competitive grants that target the development of technologies applicable for use in hybrid trucks.

H.R. 445 directs the Secretary of DOE (Secretary) to establish a grant program for the development of advanced heavy duty hybrid vehicles. The bill gives the Secretary the discretion to award between three and seven grants based on the technical merits of the proposals received. At least half of the awarded grants must be for the development of plug-in hybrid trucks. H.R. 445 also directs the Secretary to conduct a study of alternative power train designs for use in advanced heavy duty hybrid vehicles. Grant applicants may include partnerships between manufacturers or electrical utilities in to conduct research authorized by the bill. Awards under H.R. 445 will be for up to $3 million per year for three years. Appropriations are authorized for $16 million per year for fiscal years 2009 through 2011.

Legislative History

On June 17, 2008, the Subcommittee on Energy and Environment met to consider a Chairman’s Mark of the “Heavy Hybrid Truck Research and Development Act of 2008,” a bill authored by Representative Sensenbrenner. An amendment offered by Ms. Biggert was agreed to by voice vote. The Subcommittee reported the Chairman’s Mark, as amended, to the Committee on a voice vote.

The Chairman’s Mark, as reported by the Subcommittee on Energy and Environment, was introduced on June 19, 2008 as H.R. 6323, the “Heavy Hybrid Truck Research and Development Act of 2008” by Representative Sensenbrenner. The bill was referred to the Committee on Science and Technology.

On July 16, 2008, the Committee met to consider H.R. 6323. An amendment in the nature of a substitute offered by Representative Hall on behalf of Mr. Sensenbrenner was agreed to by voice vote. An amendment to the amendment in the nature of a substitute offered by Mr. Reichert was agreed to by voice vote. The Committee voted by voice vote to report the bill, as amended, to the House. On September 16, 2008, the Committee reported H.R. 6323 to the House (H. Rept. 110–855). On September 24, 2008, the House agreed to suspend the rules and pass H.R. 6323 by voice vote.
On October 2, 2008, H.R. 6323 was received in the Senate and referred to the Committee on Commerce, Science and Transportation. No further legislative action was taken on H.R. 6323.

On January 9, 2009, the bill was reintroduced in the House as H.R. 445, the Heavy Duty Hybrid Vehicle Research, Development, and Demonstration Act of 2009, and referred to the House Committee on Science and Technology.

The House considered the bill on suspension on September 9, 2009 and passed the bill, as amended, by voice vote.

The bill was referred to the Senate Committee on Energy and Natural Resources. No other legislative actions was taken on H.R. 445.

2.2—H.R. 469, PRODUCED WATER UTILIZATION ACT OF 2009

Background and Summary of Legislation

As the population of the United States increases, additional potable water supplies are required to sustain individuals, agricultural production, and industrial users, particularly in the Mountain West and desert Southwest. During the development of domestic energy sources, including coal-bed methane, oil, and natural gas, water may be extracted from underground sources and brought to the surface, often increasing energy production from subsurface geological formations in the process. Produced water frequently contains increased levels of potentially harmful dissolved solids, rendering much of the water non-potable and unsuitable for agricultural or industrial uses, and encouraging re-injection of the water to subsurface geological formations to safely dispose of it. This may lead to reduced production of domestic energy resources and increased costs to producers.

The environmentally responsible surface utilization of produced water would increase water supply, reduce the amount of produced water returned to underground formations, and increase domestic energy production by reducing costs associated with re-injection of produced water to the subsurface. At a time when usable water supplies are more vital than ever to support our growing economy, safe and sustainable uses of produced water need to be researched and pursued, for human, agricultural and industrial uses. This legislation addresses environmental concerns, water use issues and energy production benefits.

H.R. 469 directs the Secretary to establish a program of research, development, and demonstration of technologies for environmentally sustainable utilization of produced water for irrigational, municipal, and industrial uses, authorizing $20 million each year for fiscal years 2009 through 2013. The program addresses produced water recovery, produced water utilization and re-injection of produced water. The program also establishes a complementary R&D program at the appropriate DOE National Laboratory.

Legislative History

On May 16, 2007, Representative Hall, Ranking Member of the Committee on Science and Technology, introduced the Produced Water Utilization Act of 2007 as H.R. 2339. The bill was referred to the Committee on Science and Technology. The Subcommittee on
Energy and Environment met to consider H.R. 2339 on May 6, 2008. Representative Hall offered an amendment in the nature of a substitute, which was agreed to by voice vote. The bill, as amended, was reported favorably to the Committee by voice vote.

The Committee met to consider H.R. 2339 on July 16, 2008. No amendments were offered. The Committee voted by voice vote to report the bill, as amended in Subcommittee, to the House. On July 30, 2008, the Committee reported H.R. 2339 to the House (H. Rept. 2339). On July 30, 2008, the House suspended the rules and passed H.R. 2339 by voice vote.

On July 31, 2008, H.R. 2339 was received in the Senate and referred to the Energy and Natural Resources Committee.

On January 13, 2009 the bill was reintroduced in the House as H.R. 469, the Produced Water Utilization Act of 2009, by Representative Ralph Hall (R–TX). On February 11, 2009, the House suspended the rules and passed H.R. 469 by voice vote.

On February 12, 2009 the bill was received in the Senate and referred to the Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 469.

2.3—H.R. 549, THE NATIONAL BOMBING PREVENTION ACT OF 2009

Background and Summary of Legislation

Explosives are one of the most commonly used terrorist weapons worldwide. A National strategy is needed to deal with this threat. Many agencies within the Federal Government play a role in prevention and detection of, protection against, and response to terrorist use of explosives. It is important to designate an overall coordinator for this mission. This legislation authorizes in statute the Office of Bombing Prevention within the Department of Homeland Security for this purpose. The purpose of H.R. 549 is to amend the Homeland Security Act of 2002 to establish the Office for Bombing Prevention, to address terrorist explosive threats, and for other purposes.

Legislative History

The bill was introduced as H.R. 4749, the National Bombing Prevention Act of 2008 by Representative Peter King (R–NY) on December 17, 2007 and referred to the House Committee on Homeland Security.

The Committee on Homeland Security Subcommittee on Transportation Security and Infrastructure Protection met to consider the bill on May 1, 2008 and discharged the bill on May 20, 2008. The full Committee on Homeland Security met to consider the bill on May 20, 2008 and ordered the bill to be reported to the House, as amended, by voice vote.

On June 16, 2008 Chairman Gordon of the House Science and Technology Committee and Chairman Thompson of the House Committee on Homeland Security exchanged correspondence in which the House Committee on Homeland Security acknowledged the House Committee on Science and Technology’s jurisdiction over the bill, H.R. 549, and Chairman Gordon waived a referral of the bill.
On June 18, 2008 the bill was reported to the House, as amended, by the Committee on Homeland Security (H. Rept. 110–689). On June 18, 2008, the House suspended the rules and passed H.R. 4749 by voice vote.

On June 19, 2008, the bill was received in the Senate and referred to the Committee on Homeland Security and Governmental Affairs.

On January 15, 2009, the bill was reintroduced by Representative Thompson as H.R. 549, the National Bombing Prevention Act of 2009, and referred to the House Committee on Homeland Security.

On February 3, 2009, the House suspended the rules and passed H.R. 549 by voice vote.

On February 4, 2009 the bill was received in the Senate and referred to the Committee on Homeland Security and Governmental Affairs. No further legislative action was taken on H.R. 549.

2.4—H.R. 554, NATIONAL NANOTECHNOLOGY INITIATIVE AMENDMENTS ACT OF 2009

Background and Summary of Legislation

The Science and Technology Committee was instrumental in the development and enactment of the 21st Century Nanotechnology Research and Development Act of 2003 (P.L. 108–153), which authorizes the interagency National Nanotechnology Initiative (NNI). The 2003 statute put in place formal interagency planning, budgeting, and coordinating mechanisms for NNI. The National Science and Technology Council, through the Nanoscale Science, Engineering, and Technology (NSET) Subcommittee, plans and coordinates the NNI, and the National Nanotechnology Coordination Office (NNCO) provides technical and administrative support to the NSET.

There are twenty-six federal agencies that participate in the NNI, with 13 of those agencies reporting a nanotechnology research and development budget. The total estimated NNI budget for fiscal year 2008 is $1.49 billion. P.L. 108–153 also provides for formal reviews of the content and management of the program by the National Academy of Sciences and by the NNI Advisory Panel, a statutorily created advisory committee of non-government experts. These reviews have found that the coordination and planning processes among the participating agencies in the NNI are largely effective.

The NNI supports productive, cooperative research efforts across a spectrum of disciplines, and it is establishing a network of national facilities for support of nanoscale research and development. However, the formal reviews by external experts noted above, as well as the findings of the Committee’s oversight hearings on the NNI, have identified aspects of the interagency program that could be strengthened and improved. These areas are environmental, health and safety research; technology transfer and the fostering of commercialization of research results; and educational activities.

The purpose of H.R. 554 is to improve the content and various aspects of the planning and coordination of the National Nanotechnology Initiative (NNI). This includes provisions to strengthen the
planning and implementation of the environment, health, and safety research component of the NNI; to increase emphasis on nanomanufacturing research, technology transfer, and commercialization of research results flowing from the program; to create a new NNI component of focused, large-scale research and development projects in areas of national importance; and to enhance support for K–16 nanotechnology-related education programs.

Legislative History

On May 1, 2008, Representative Gordon, Chairman of the Committee on Science and Technology introduced the National Nanotechnology Initiative Amendments Act of 2008 as H.R. 5940. H.R. 5940 was referred to the Committee on Science and Technology.

The Committee met to consider H.R. 5940 on May 7, 2008. An amendment offered by Representative Johnson and an amendment offered by Representative Baird were adopted by separate voice votes. The Committee voted by voice vote to report the bill, as amended, to the House. On June 4, 2008, the Committee reported H.R. 5940 to the House (H. Rept. 110–682). On June 5, 2008, the House agreed to a motion to suspend the rules and pass H.R. 5940 by a recorded vote of 407–6.

On June 6, 2008, H.R. 5940 was received in the Senate and referred to the Committee on Commerce, Science, and Transportation.

On January 15, 2009, H.R. 5940 was reintroduced as H.R. 554, the National Nanotechnology Initiative Amendments Act of 2009 by Representative Bart Gordon (D–TN) and referred to the House Committee on Science and Technology. The House considered the bill on suspension on February 11, 2009 and passed the bill by voice vote.

H.R. 554 was received in the Senate on February 12, 2009 and referred to the Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 554. However, H.R. 554 also passed the House as part of H.R. 5116 (see Chapter I for further information). This portion of H.R. 5116 was stricken by the Senate before enactment.

2.5—H.R. 631, WATER USE EFFICIENCY AND CONSERVATION RESEARCH ACT OF 2009

Background and Summary of Legislation

Drought and recent water shortages in several regions of the United States have increased concern about water supply at all levels of government. Since 1950, the United States population has increased nearly 90 percent. In that same period, public demand for water has increased 209 percent. Thirty six states are anticipating local, regional, or statewide water shortages by 2013. Some states are already in the middle of a severe drought.

Although some water efficiency strategies require an initial capital investment, in the long run, conserving water provides significant cost savings for water and wastewater systems. Water efficiency and re-use programs help systems avoid, downsize, and postpone expensive infrastructure projects, by developing new water supplies.
In conjunction with its statutory responsibilities to ensure water quality under the Clean Water Act and the Safe Drinking Water Act, EPA has a program of research and development on water treatment technologies, health effects of water pollutants, security from deliberate contamination, and watershed protection. Current annual funding for these activities is approximately $50 million. EPA currently has no research and development effort that addresses water supply, water-use efficiency or conservation.

H.R. 631 establishes a research and development program within the Environmental Protection Agency’s Office of Research and Development (ORD) to promote water use efficiency and conservation. The research program includes the development of technologies and processes to expand water supplies through storage, treatment, and reuse of rainwater, stormwater, and greywater; research on water storage and distribution systems; research on behavioral, social, and economic barriers to achieving greater water efficiency; and research on the use of watershed planning.

Legislative History

On October 24, 2007, Representative Matheson introduced H.R. 3957. The bill was referred to the Committee on Science and Technology.

The Subcommittee on Energy and Environment met to consider H.R. 3957 on May 6, 2008. No amendments were offered. The Subcommittee voted to report the measure to the Committee by voice vote.

The Committee met to consider H.R. 3957 on July 16, 2008. Representative Matheson offered a manager’s amendment to make technical corrections to the bill and the amendment was adopted by voice vote. Representative Johnson offered an amendment which was also adopted by voice vote. Finally, an amendment offered by Representative Giffords was adopted by voice vote. The Committee voted to report the measure, as amended, to the House by voice vote. On July 30, 2008, the Committee reported H.R. 3957 to the House (H. Rept. 110–802). On July 30, 2008, the House suspended the rules and passed H.R. 3957 by voice vote.

On July 31, the bill was referred to the Senate Committee on Environment and Public Works.

On January 22, 2009, the bill was reintroduced to the House by Representative Matheson as H.R. 631, the Water Use Efficiency and Conservation Research Act of 2009 and referred to the House Committee on Science and Technology.

On February 11, 2009, the House suspended the rules and passed H.R. 631 by voice vote.

On February 12, 2009, the bill was referred to the Senate Committee on Environment and Public Works. No further legislative action was taken on H.R. 631.
2.6—H.R. 915, FAA REAUTHORIZATION ACT OF 2009

Background and Summary of Legislation

The FAA Reauthorization Act of 2009, H.R. 915, authorized appropriations for the Federal Aviation Administration for fiscal years 2009 through 2012 to improve aviation safety and capacity, to provide stable funding for the national aviation system, and for other purposes. H.R. 915 would authorize almost $54 billion for FAA programs over three years. The bill raised fuel taxes for corporate jets and other general aviation aircraft, but kept fuel taxes paid by the airlines and passengers’ taxes at their current rates. The bill allowed airports to increase passenger facility charges, raising the maximum from $4.50 to $7 per passenger. The bill increased authorized spending for facilities and equipment to support development of Next Generation air traffic modernization initiatives, and authorized increased funding for airport infrastructure improvement grants. The bill modified FAA management and oversight of Next Generation air traffic modernization projects, and included provisions addressing system capacity, aviation safety, environmental issues, and airline industry issues, including airline passenger rights issues.

Legislative History

Representative James Oberstar introduced H.R. 915 on February 9, 2009. H.R. 915 was referred to the House Committee on Science and Technology and the House Committee on Transportation and Infrastructure.

On May 19, 2009 the Committee on Science and Technology discharged the bill. On May 19, 2009 the Committee on Transportation and Infrastructure reported the bill to the full house (H. Rept. 111–119).

On May 21, 2009 the Committee on Transportation and Infrastructure submitted a supplemental report to the full house. Representative Oberstar offered an amendment, which was passed by voice vote. Representative Lee offered an amendment, which was passed by voice vote. Representative Richardson offered an amendment, which was passed by voice vote. Representative Cueller offered an amendment, which was passed by voice vote. Representative Cassidy offered an amendment, which was passed by voice vote. Representative Murphy offered an amendment, which was passed by voice vote. Representative Kilroy offered an amendment, which was passed by voice vote. Representative Lowey offered an amendment, which was passed by voice vote. Representative Ackerman offered an amendment, which was passed by voice vote. Representative Burgess offered an amendment, which was passed by a recorded vote of 420–0 (Roll Call No. 288). Representative McCaul offered an amendment, which was passed by a recorded vote of 417–2 (Roll Call No. 289). The bill was passed, as amended by a recorded vote of 277–136 (Roll Call No. 291).

On June 1, 2009 the bill was received in the Senate and referred to the Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 915.
Background and Legislative History

H.R. 957 addresses a significant opportunity for energy savings and greenhouse gas emissions reductions: energy consumption in buildings. According to Department of Energy (DOE) 2003 statistics, buildings consume more energy than any other sector of the economy, including industrial processes and transportation. Buildings consume 39 percent of primary energy in the United States and 70 percent of electricity. Innovations in high-performance building technologies, materials, techniques and systems, combined with advances in photovoltaic and other distributed clean energy technologies, have the potential to dramatically transform the pattern of energy consumption associated with buildings. These building systems and components—coupled with a whole building approach that optimizes the interactions among building systems and components—enable buildings to use considerably less energy, while also helping to meet national goals for sustainable development, environmental protection, and energy security. Achieving this depends on architects, engineers, contractors and other buildings professionals working together from the earliest stages of planning.

H.R. 1716 provides interdisciplinary education and training in high-performance building design and construction to the next generation of architects and engineers. The purpose of this bill is to authorize higher education curriculum development and graduate training in advanced energy and green building technologies.

Legislative History

On March 27, 2007, Representative McCaul introduced the bill as H.R. 1716, the *Green Energy Education Act of 2007*. The bill was referred to the Committee on Science and Technology.

On May 23, 2007, the Committee met to consider H.R. 1716. An amendment offered by Representative McCaul was adopted by voice vote. The Committee voted by voice vote to report the bill, as amended, to the House. On June 5, 2007, the Committee reported H.R. 1716 to the House (H. Rept. 110–173). On June 6, 2007, the House suspended the rules and passed H.R. 1716 by a recorded vote of 416–0.

On June 7, 2007, the bill was received in the Senate, and referred to the Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 1716.

On February 10, 2009, the bill was reintroduced to the House by Representative McCaul as H.R. 957, the *Green Energy Education Act of 2009*, and referred to the House Committee on Science and Technology.

On April 22, 2009, the House suspended the rules and passed H.R. 957 by a recorded vote of Y–277, N–136 (Roll Call No. 199).

On February 12, 2009, the bill was referred to the Senate Committee on Energy and Natural Resources. On December 8, 2009 the Senate Committee on Energy and Natural Resources held a hearing on the bill. No further legislative action was taken on H.R. 957. However, H.R. 957 also passed the House as part of H.R. 5116 (see...
Chapter I for further information). This provision was stricken by the Senate prior to enactment of H.R. 5116.

2.8—H.R. 1145, NATIONAL WATER RESEARCH AND DEVELOPMENT INITIATIVE ACT OF 2009

Background and Summary of Legislation

The purpose of H.R. 1145 is to authorize a National Water Research and Development Initiative to coordinate the Federal Government's efforts in research, development, demonstration, data collection and dissemination, education, and technology transfer related to water resources.

Water policy in the United States remains essentially unchanged despite a myriad of reports recommending broad changes to address dwindling water supplies. Multi-year droughts continue to plague regions and states around the country, including the Southeast, Texas, and California. For many municipalities, intense competition for water and diminished supplies will force local water agencies to make tough decisions on water allocations including implementation of restrictions to protect essential ecosystem services. Droughts, changing patterns of precipitation and snowmelt, and increased water loss due to evaporation as a result of warmer air temperatures are indicators that climate variability and climate change have impacts that are being felt across the United States.

The Intergovernmental Panel on Climate Change's (IPCC) latest report projects that water supplies stored in glaciers and snow cover will decline in the course of the century, thus reducing water availability in regions supplied by melt water from major mountain ranges. The United States' water supply cannot support future populations at its current rate of consumption. The country's population has increased from five million citizens in the 19th century to over 300 million today, and it continues to grow at a rate of roughly one percent annually. Available surface water supplies have not increased in the United States since the 1990s, and groundwater tables are continuing to decline.

These water supply problems have substantial economic impacts. According to a 2000 report from the National Oceanic and Atmospheric Administration (NOAA), each of the eight water shortages over the past 20 years from drought or heat waves resulted in $1 billion or more in monetary losses. Further, an adequate supply of water is integral to industry. Water shortages contribute to reductions in job creation and retention, and increased water demand results in increased costs to businesses. Available water supplies are decreasing in the face of increasing demand. This problem necessitates that the federal government establish a comprehensive strategy for research and development to ensure a sustainable water supply.

Currently, over 20 federal agencies carry out research and development on some aspect of water supply, water quality or water management. The National Academies of Science surveyed these agencies for a 2004 study and, based upon the responses, estimated approximately $700 million in federal expenditures on water research. Despite this investment, an increase in the number of water shortages and emerging conflicts over water supplies suggest
that we are inadequately prepared to address the nation’s water management issues. Quantitative knowledge of water supply in the United States is currently inadequate. Accurate and timely data on water resources and variations in water supplies over time is essential to effectively manage water supplies.

Accordingly, a national initiative coordinating federal water research is necessary to ensure that the United States maintains adequate water supplies in the coming decades. H.R. 1145 seeks to improve the Federal Government’s efforts in water research, development, demonstration, data collection and dissemination, education, and technology transfer activities to address changes in water use, supply, and demand in the United States.

The bill codifies the Interagency Committee created in 2003, the Subcommittee on Water Availability and Quality (SWAQ) of the National Science and Technology Council’s Committee on Environment and Natural Resources. SWAQ was created to identify science and technology needs to address the growing issues related to freshwater supplies, to develop a coordinated multiyear plan to improve research on water supply and water quality, and to enhance the collection and availability of data needed to ensure an adequate water supply for the nation. H.R. 1145 incorporates suggestions in the NAS’s 2004 report that are intended to strengthen the Committee. By strengthening the SWAQ and providing it explicit Congressional authorization, the recommendations of the 2007 SWAQ report will receive due consideration and form the foundation of a national strategy to ensure that the United States has a sustainable water supply.

Legislative History

On September 23, 2008 Committee Chairman Bart Gordon introduced H.R. 6997, the National Water Research and Development Initiative Act, which was referred to the Committee on Science and Technology. On February 24, 2009, Chairman Gordon reintroduced the legislation in the 111th Congress as H.R. 1145, and the bill was referred to the House Committee on Science and Technology.

On March 25, 2009, the Committee met to consider H.R. 1145, the National Water Research and Development Initiative Act. Mr. Baird moved that the Committee favorably report H.R. 1145, as amended, to the House. The motion was agreed to by voice vote.

The bill was reported to the House on April 21, 2009 (H. Rept. 111–76). On April 23, 2009 the House considered H.R. 1145. Representative Gordon offered two amendments, Representative Hastings offered an amendment, Representative Cardoza offered an amendment, Representative Arcuri offered an amendment, Representative Kirk offered an amendment, Representative Blumenauer offered an amendment, Representative Moore offered an amendment, and Representative Brown-Waite offered an amendment, each of which were agreed to by voice vote. Representative Kosmas offered an amendment which was agreed to by a recorded vote of 424–0 (Roll Call No. 200). Representative Teague offered an amendment which was agreed to by a recorded vote of 423–1 (Roll Call No. 201). Representative Roskam offered an amendment which failed by a recorded vote of 194–236 (Roll Call No. 202). Representative Shadegg offered an amendment which
failed by a recorded vote of 160–271 (Roll Call No. 203). H.R. 1145 was passed in the House, as amended, on April 23, 2009 with a vote of 413–10 (Roll Call No. 205).

On April 23, 2009, the bill was received in the Senate and referred to the Committee on Environment and Public Works. No further legislative action was taken on H.R. 1145.

2.9—H.R. 1580, ELECTRONIC WASTE RESEARCH AND DEVELOPMENT ACT

Background and Summary of Legislation

The growing number of unwanted televisions, computers, cell phones, monitors, and other electronic devices ready for discard is a growing problem in the United States and worldwide. The Environmental Protection Agency (EPA) estimated that between 1980 and 2004, 2 billion electronic products were sold in the U.S. Of these, it estimated about half were still in use, while 42 percent were discarded. Further estimates revealed that only 11 percent of those discarded devices reached recyclers. Most were disposed of in landfills.

Electronics recycling is increasing in the United States, but the industry faces a number of challenges. These challenges include convincing consumers to recycle, the logistics of collecting unwanted electronic devices, efficiently disassembling products, safely removing hazardous substances, efficiently processing materials, and recovering value from all of the materials found in the electronic devices.

The design of electronic products could also aid in making recycling more cost efficient. Many products are difficult to disassemble and the location of hazardous materials varies (i.e., mercury lamps in some flat panel displays). Greater use of materials recycled from old electronics in the manufacturing of new products would help make recycling more profitable.

Scores of different chemicals and materials comprise computers, televisions, cell phones and other electronics. Some of the substances used in electronics, like lead and hexavalent chromium, have raised enough health and environmental concerns that the European Union adopted a measure to ban their use in electronics products sold in Europe. Manufacturers have been able to comply with these requirements for most consumer electronics, but the process to ban substances sensitive to the environment and human health is on-going. Comprehensive data on the physical properties of substitutes for harmful materials would enable electronics designers to change their products more quickly in response to concerns raised about different materials. The availability of this type of comprehensive data, provided by the National Institute of Standards and Technology, enabled manufacturers to quickly meet the challenge of eliminating ozone-layer depleting chlorofluorocarbons (CFCs) from their products in the 1980s.

Increasing the amount of electronics sent to responsible recyclers is essential to reducing the impacts of electronic device disposal. Of equal importance, though, is prolonging the use, and re-use, of these devices. Estimates of the total amount of energy required over a computer’s lifecycle show that roughly 80 percent goes into
the computer's production phase, and only 20 percent into the use phase. Extending the amount of time a product is in use could not only reduce the volume of discarded electronic devices, but also lessen the impact of the production of these complex and sophisticated products on the environment. Consumers are often wary of purchasing used electronics because they are unsure of a used product's value or they are afraid it will not meet their needs. Developing re-use markets that aid consumers in evaluating used devices could help keep these devices in the hands of consumers for a longer period of time. Prolonging a device's use could also be accomplished by developing ways for consumers to easily upgrade their current products. Consumers need to be better educated about electronics recycling. In addition, the training of current and future engineers, and others in the fields of electronics production and recycling could be improved to incorporate environmental considerations in to the design of electronics and the practice of recycling.

The purpose of H.R. 1580 is to authorize the Administrator of the Environmental Protection Agency to award grants to reduce the volume of discarded electronic products in the United States through research, development, and demonstration projects for product design, recycling and re-use. H.R. 1580 requires the Administrator of the Environmental Protection Agency (EPA) to award multiyear grants through a competitive, merit-based process. The grants are to conduct research to create innovative and practical approaches to manage the environmental impacts of electronic devices through recycling, reuse, reduction of the use of hazardous materials, and life-cycle extension; and through such research, to contribute to the professional development of scientists, engineers, and technicians in the fields of electronic device manufacturing, design, refurbishing, and recycling.

The Administrator is also required to enter into an arrangement for the National Academy of Sciences to report to Congress on opportunities for, and barriers to, increasing the recyclability of electronic devices and making electronic devices safer and more environmentally friendly, the risks posed by the storage, transport, recycling, and disposal of unwanted electronic devices, the current status of research and training programs to promote the environmental design of electronic devices to increase the recyclability of such devices, and regulatory or statutory barriers that may prevent the adoption or implementation of best management practices or technological innovations that may arise from the research and training programs established by the bill.

Additionally, H.R. 1580 requires the Director of the National Institute of Standards and Technology (NIST) to establish an initiative to develop a comprehensive physical property database for environmentally friendly alternative materials for use in electronic devices and develop a strategic plan to establish priorities and physical property characterization requirements for the database.

Legislative History

Representative Bart Gordon introduced H.R. 1580, the Electronic Waste Research and Development Act, on March 18, 2009. The bill was referred to the House Committee on Science and Technology
on March 18, 2009. The bill was reported to the House on April 21, 2009 (H. Rept. 111–75). On April 23, 2009 the House suspended the rules and passed H.R. 1580 by voice vote.

On April 23, 2009 the bill was referred to the Senate Committee on Environment and Public Works. No further legislative action was taken on H.R. 1580.

2.10—H.R. 1622, TO PROVIDE FOR A PROGRAM OF RESEARCH, DEVELOPMENT, AND DEMONSTRATION ON NATURAL GAS VEHICLES

Background and Summary of Legislation

Natural gas vehicles have the potential to address important energy security and environmental issues. While the United States imports the majority of the petroleum it uses, most natural gas is domestically produced. As a result, increased use of natural gas vehicles may reduce dependence on foreign oil imports and promote U.S. energy security. In addition, natural gas vehicles, in general, have lower pollutant and greenhouse gas emissions than gasoline vehicles.

The Energy Information Administration estimates that there were roughly 116,000 compressed natural gas vehicles in the United States in 2006, and roughly 3,000 liquefied natural gas vehicles. Roughly two-thirds of natural gas vehicles are light-duty (i.e., passenger) vehicles. This compares to roughly 230 million conventional (mostly gasoline) light-duty vehicles. Furthermore, of the roughly 16.5 million new light-duty vehicles sold in 2006, only about 2,000 (0.01%) were natural gas vehicles.

The Vehicle Technologies program at the Department of Energy funds a wide range of research activities on passenger vehicles and heavy-duty trucks. The program’s mission is to ‘develop ‘leap frog’ technologies that will provide Americans with greater freedom of mobility and energy security, while lowering costs and reducing impacts on the environment.’ The Department of Energy is currently addressing these research needs through two public-private research programs: the 21st Century Truck Partnership, which conducts research and development through collaborations with the heavy-duty trucking industry, and the FreedomCar and Hydrogen Fuel Initiative programs which examine the pre-competitive, high-risk research needed to develop technologies that will apply to a range of affordable cars and light trucks. Though the Department has funded natural gas vehicle R&D in the past there are currently no activities in this area.

The purpose of H.R. 1622 is to provide for a program of research, development, and demonstration on natural gas vehicles and related technologies. The bill directs the Secretary of Energy to conduct a five-year program of natural gas vehicle research, development, and demonstration, coordinate with the Administrator of the Environmental Protection Agency (EPA) regarding such program, coordinate with the natural gas vehicle industry to ensure cooperation between the public and the private sector, and report to Congress on implementing such program.
Legislative History

Representative John Sullivan introduced H.R. 1622 on March, 19, 2009. On June 16, 2009, the Subcommittee on Energy and Environment reviewed the bill. On June 24, 2009 the Committee on Science and Technology met to consider the bill. The bill was reported to the House on July 14, 2009 (H. Rept. 111–206). On July 21, 2009 the House suspended the rules and passed H.R. 1580 by a recorded vote of 393–35 (Roll Call No. 598).

On July 22, 2009 the bill was referred to the Senate Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 1622.

2.11—H.R. 1709, STEM EDUCATION COORDINATION ACT OF 2009

Background and Summary of Legislation

The purpose of this bill is to establish a committee through the National Science and Technology Council (NSTC) within the Office of Science and Technology Policy (OSTP), to coordinate Federal programs and activities in support of science, technology, engineering, and mathematics (STEM) education.

A consensus exists that improving STEM education across the United States is a necessary condition for preserving the Nation’s capacity for innovation and discovery and for ensuring the Nation’s economic strength and competitiveness. A variety of STEM education programs and activities exist for K–16 students at the federal research and development (R&D) agencies, which include: the National Science Foundation, the National Aeronautics & Space Administration, the National Oceanic & Atmospheric Administration, the National Institute of Standards and Technology, the Environmental Protection Agency, the Department of Energy, and the National Institutes of Health.

For the most part, agencies have developed their programs independently rather than sharing ‘best practices’ and collaborating across agencies. Each program has also developed its own methods and criteria for evaluation, making a comparison of effectiveness across the programs impossible. This is often the case even within agencies, where there appears to be little communication between different offices and directorates, each of which may manage their own STEM education programs. Finally, the agencies have at times had trouble building widespread awareness of their programs among teachers and other practitioners.

In 2006, the Department of Education, through the American Competitiveness Council (ACC), launched a year-long review of federal STEM education programs. The ACC process identified 105 federal STEM education programs, across all levels, totaling $3.12 billion in federal funding. Agencies submitted a total of 115 evaluations for those programs. Only 10 of the evaluations were determined to be scientifically rigorous and only four of them led the ACC to conclude that the educational activity evaluated had a meaningful positive impact. The ACC concluded, that, ‘despite decades of significant federal investment in science and math education, there is a general dearth of evidence of effective practices and activities in STEM education.’
In its May 2007 report, the ACC made six key recommendations:
1) The government should maintain and update regularly an inventory of federal STEM education programs, including goals and metrics, to facilitate stronger interagency coordination; 2) Agencies and the federal government at large should foster knowledge of effective practices through improved evaluation and implementation of proven effective, research-based instructional materials and methods; 3) Federal agencies should improve the coordination of their K–12 STEM education programs with states and local school systems; 4) Federal agencies should adjust program designs and operations so that programs can be assessed and measurable results can be achieved, consistent with STEM education program goals; 5) Funding for federal STEM education programs designed to improve STEM education outcomes should not increase unless a plan for rigorous, independent evaluation is in place, appropriate to the types of activities funded; and 6) Agencies with STEM education programs should collaborate on implementation of ACC recommendations under the auspices of the NSTC.

In October 2007, the National Science Board (NSB) released its own report, ‘A National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics Education System.’ A key recommendation of the NSB action plan was the creation of a committee on STEM Education, under NSTC, responsible for coordinating STEM education programs across federal R&D agencies and the Department of Education. Similarly, many of the witnesses at the Research and Science Education Subcommittee hearings held in the 110th Congress testified that there is a need for improved coordination among the agencies regarding their STEM education efforts in order to better communicate best practices and eliminate inefficiencies. Even though an NSTC subcommittee on education and workforce does currently exist, the ACC and NSB reviews and the Subcommittee hearings demonstrated that current efforts are far from sufficient to ensure a meaningful federal investment in STEM education.

H.R. 1709, the STEM Education Coordination Act of 2009, requires the Office of Science and Technology Policy (OSTP), through the National Science and Technology Council (NSTC), to establish a committee to coordinate federal programs and activities in support of STEM education. In addition, the bill requires this committee to develop a STEM education strategic plan to inform program and budget planning for agencies and to establish and maintain an inventory of federally sponsored STEM education activities, including documentation on program assessments and participation by minorities. Finally, H.R. 1709 requires the Director of OSTP to submit an annual report to Congress including a description and level of funding of the STEM education programs and activities of each participating Federal agency for the previous and current fiscal years.

Legislative History

On March 25, 2009, Representative Bart Gordon introduced H.R. 1709. The bill was referred to the House Committee on Science and Technology and the House Committee on Education and Labor. On
March 26, the bill was referred to the Research and Science Education Subcommittee. On March 31, 2009, the Committee on Science and Technology met to consider H.R. 1709. The bill was reported to the House on June 2, 2009 (H. Rept. 111–130). On June 8, 2009 the House suspended the rules and passed H.R. 1709 by a recorded vote of 353–39 (Roll Call No. 312).

On June 8, 2009, H.R. 1790 was referred to the Senate Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 1790. However, H.R. 1709 also passed the House as a component of H.R. 5116. This provision was ultimately enacted (see Chapter I for further information on H.R. 5116).

2.12—H.R. 1736, THE INTERNATIONAL SCIENCE AND TECHNOLOGY COOPERATION ACT OF 2009

**Background and Summary of Legislation**

The purpose of this bill is to provide for the establishment of a committee under the National Science and Technology Council to identify and coordinate international science and technology research and training partnerships that can strengthen the U.S. science and technology enterprise, improve economic and national security, and support U.S. foreign policy goals.

In 2008, the National Science Board (NSB) issued a report, ‘International Science and Engineering Partnerships: A Priority for U.S. Foreign Policy and our Nation’s Innovation Agenda,’ in which the Board made a series of recommendations for increased coherence and coordination of federally sponsored international science and engineering activities that serve both a domestic mission and a foreign policy mission.

In particular, the NSB called on the White House Office of Science and Technology Policy (OSTP) to take a more active and prominent role both in setting federal priorities for international science and engineering cooperation and in coordinating efforts across agencies, including by reestablishing a Committee on International Science, Engineering and Technology (CISET) under the National Science and Technology Council (NSTC). Such a Committee existed in the 1990’s under the Clinton Administration.

CISET’s mandate was not defined within any particular area of science and technology (S&T). Rather, CISET’s role was to review the wide range of bilateral and multilateral international scientific programs carried out by the technical agencies in the U.S. Government, and to identify opportunities for international cooperation and interagency coordination in response to new needs and opportunities. In particular, CISET was charged to: identify, and coordinate international cooperation that can strengthen the domestic S&T enterprise and promote U.S. economic competitiveness and national security; utilize American leadership in S&T to address global issues and to support the post-Cold War tenets of U.S. foreign policy—promoting democracy, maintaining peace, and fostering economic growth and sustainable development; and coordinate the international aspects of federal R&D funding across the Federal agencies.
The Bush Administration OSTP disbanded CISET in 2001. Dr. Marburger, former Director of OSTP, explained in his testimony before the Research and Science Education Subcommittee in 2008 that his approach to coordinating international S&T partnerships was to draw together agencies in meetings focused on specific science topics such as nanotechnology or genomics, or on specific countries such as China or Brazil. The former meetings occur naturally in the NSTC context, the latter occur on the schedule of high-level bilateral commission meetings to review progress under the S&T agreements. But many other experts, including all of the witnesses at the March 24, 2009 hearing before the Subcommittee, argued that significant opportunities are missed by this ad hoc approach to international S&T cooperation, especially opportunities at the intersection of science and diplomacy. The witnesses at the March 2009 hearing agreed that a reconstituted CISET could serve an important role in ensuring that the international component of the national R&D agenda is sufficiently addressed and in helping to bring S&T to bear on our foreign policy goals.

H.R. 1736, the *International Science and Technology Cooperation Act of 2009*, requires the establishment of a committee under the National Science and Technology Council with the responsibility to identify and coordinate international science and technology cooperation that can strengthen the U.S. S&T enterprise, improve economic and national security, and support U.S. foreign policy goals. Furthermore, the bill requires that the committee report to Congress annually on its activities.

**Legislative History**

Representative Brian Baird introduced H.R. 1736 on March 26, 2009. H.R. 1736 was referred to the House Committee on Science and Technology, and subsequently referred to the Subcommittee on Research and Science Education on March 26, 2009. On April 29, 2009, the Committee on Science and Technology met to consider the bill. The bill was reported to the House on May 21, 2009 (H. Rept. 111–128). On June 8, 2009 the House suspended the rules and passed H.R. 1736 by a recorded vote of 341–52 (Roll Call No. 311).

On June 9, 2009, H.R. 1736 was referred to the Senate Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 1736.

2.13—H.R. 2020, NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT ACT OF 2009

**Background and Summary of Legislation**

The purpose of this bill is to strengthen the planning and coordination mechanisms of the Networking and Information Technology Research and Development (NITRD) program and to update the research content of the program. The legislation implements a number of recommendations made in a recent President’s Council of Advisors on Science and Technology (PCAST) assessment of the program.

Over the past 50 years, advances in networking and information technology (NIT) such as the internet and wireless communication...
technologies have permeated society and contributed significantly to the growth of the U.S. economy. Breakthroughs in the coming decades are expected to lead to a more reliable and secure internet, personalized health monitoring, and increased transportation safety and efficiency. Advances in networking and information technologies and their anticipated benefits are built upon a strong foundation of research and development (R&D).

The NITRD program, originally authorized in the **High Performance Computing Act of 1991** (P.L. 102–194), is a multi-agency research effort to accelerate progress in the advancement of computing and networking technologies and to support leading edge computational research in a range of science and engineering fields. The 1991 statute established a set of mechanisms and procedures to provide for interagency planning, coordination, and budgeting of R&D activities carried out under the program.

The NITRD Subcommittee of the National Science and Technology Council (NSTC) is the working body for interagency planning and coordination and includes representatives from each of the participating NITRD agencies as well as the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP). In the current fiscal year (FY 2009), 13 Federal agencies are full participants in the NITRD program and requested a total budget of $3.55 billion, an increase of $0.21 billion or approximately 6 percent over the FY 2008 level of $3.34 billion. Additional agencies participate in the planning activities of the NITRD program, but do not report their funding levels or contribute to the operating budget of the National Coordination Office (NCO). The NCO provides staff support for the NITRD Subcommittee and the program's Advisory Committee and serves as the public interface for the program. Currently, the NITRD program is divided into eight major research components: Cyber Security and Information Assurance; High End Computing Infrastructure and Applications; High End Computing Research and Development; Human Computer Interaction and Information Management; High Confidence Software and Systems; Large Scale Networking; Software Design and Productivity; and Social, Economic, and Workforce Implications of IT.

In August 2007, PCAST completed an assessment of the NITRD program and issued a report entitled, **Leadership Under Challenge: Information Technology R&D in a Competitive World**. The report indicates that while the U.S. remains the global leader in NIT, several countries, including China and India, are investing heavily in R&D and higher education. PCAST found that while the NITRD program has been effective at addressing the IT needs of the Federal agencies and the Nation, a number of changes are necessary to guarantee continued U.S. leadership in networking and information technology.

The **Networking and Information Technology Research and Development Act of 2009**, H.R. 2020, requires the development and periodic update of a strategic plan for the NITRD program which specifies near-term and long-term objectives, and the timeframe and metrics for achieving those objectives, authorizes NITRD agencies to support large-scale, long-term, interdisciplinary research in areas of national importance, requires the NCO Director to convene
a task force, with representatives from universities, industries, and federal laboratories, to explore mechanisms for carrying out collaborative research and development activities for cyber-physical systems, formally establishes the NCO, delineates the office's responsibilities, mandates annual operating budgets, specifies the source of funding for the office (consistent with current practice), and stresses the role of the NCO in developing the strategic plan and in public outreach and communication with outside communities of interest.

**Legislative History**

On April 22, 2009, Representative Bart Gordon introduced H.R. 2020. H.R. 2020 was referred to the House Committee on Science and Technology. On April 29, 2009, the Committee on Science and Technology met to consider the bill. The bill was reported to the House on May 12, 2009 (H. Rept. 111–102). On May 12, 2009 the House suspended the rules and passed H.R. 2020 by voice vote.

On May 13, 2009, H.R. 2020 was referred to the Senate Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 2020. However, H.R. 2020 also passed the House as a component of H.R. 5116 (see Chapter I for more information on this bill). This provision was stricken from the bill by the Senate prior to enactment.

**2.14—H.R. 2407, NATIONAL CLIMATE SERVICE ACT OF 2009**

**Background and Need for Legislation**

On February 8, 2010, U.S. Commerce Secretary Gary Locke announced the Department's intent to create a National Climate Service at the National Oceanic and Atmospheric Administration (NOAA). H.R. 2407, the National Climate Service Act of 2009, proposes to better integrate NOAA's climate activities and to make them more accessible. The proposed NOAA Climate Service would have equivalent organizational standing with NOAA's other divisional structures, such as the National Weather Service, the National Ocean Service and the National Marine Fisheries Service.

H.R. 2407 defines the activities to be undertaken by NOAA to serve three primary purposes: (1) advance understanding of climate variability and change at all geographic scales; (2) provide forecasts, warnings, and information to the public on climate variability and change and its effects on the public; (3) and support development of adaptation and response plans by Federal agencies; State, local and tribal governments, the private sector and the public.

H.R. 2407, among other things, requires the interagency development of a National Climate Service, addresses the internal operational structure of the Climate Service Program, requires the establishment of a Climate Service Advisory Committee and at least two Subcommittees, repeals the National Climate Program Act of 1978, establishes regional integrated sciences and assessments teams, and requires a survey of current and future climate services needs, and includes an implementation plan for the National Climate Service. Nothing in H.R. 2407 authorizes the National Climate Service or NOAA’s Climate Service Program to require state,
tribal, or local governments to develop adaptation or response plans or to take other actions that could increase the financial burdens of those governmental entities.

Legislative History

H.R. 2407 was introduced by Representative Bart Gordon on May 14, 2009 and referred to the House Committee on Science and Technology. The Committee met to consider the bill on June 3, 2009. H.R. 2407 was ordered to be reported, as amended, by a recorded vote of 24–12. No further legislative action was taken on H.R. 2407. However, the substance of H.R. 2407 passed the House as a component of H.R. 2454 (see below).

2.15—H.R. 2454, AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009

Background and Summary of Legislation

Between now and 2030, an estimated $1.5 trillion will be invested in energy infrastructure in the United States and more than $26 trillion will be invested worldwide. How these investments are made will have dramatic and consequential effects on the national security and economic future of the United States. How these investments are made may also determine the fate of our planet’s climate.

Investments in clean energy offer an important opportunity to spur economic growth. However, uncertainty about federal policies regarding energy and global warming pollution is impeding investors and CEOs in making investments in the energy sector. By establishing an energy policy that provides certainty with respect to both support for clean energy and regulatory obligations for global warming pollution, we can free up investments that have been on hold. By unleashing billions of dollars of private and public investment in new power generation, retrofits of existing capacity, energy efficiency, and offsets for global warming pollution, clean energy legislation can be an engine for both economic growth and job creation.

The purpose of H.R. 2454 is to create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy. Measures in the legislation, such as investments in preventing tropical deforestation, will achieve significant additional reductions in carbon emissions. The bill sets forth provisions concerning clean energy, energy efficiency, reducing global warming pollution, transitioning to a clean energy economy, and providing for agriculture and forestry related offsets. Includes provisions: (1) creating a combined energy efficiency and renewable electricity standard and requiring retail electricity suppliers to meet 20% of their demand through renewable electricity and electricity savings by 2020; (2) setting a goal of, and requiring a strategic plan for, improving overall U.S. energy productivity by at least 2.5% per year by 2012 and maintaining that improvement rate through 2030; and (3) establishing a cap-and-trade system for greenhouse gas (GHG) emissions and setting goals for reducing such emissions from covered sources by 83% of 2005 levels by 2050.
Legislative History

H.R. 2454, the American Clean Energy and Security Act of 2009 was introduced by Rep. Henry A. Waxman and Rep. Edward J. Markey on May 15, 2009. On May, 2009, H.R. 2454 was referred to the House Committee on Energy and Commerce, the House Committee on Foreign Affairs, the House Committee on Financial Services, the House Committee on Education and Labor, the House Committee on Science and Technology, the House Committee on Transportation and Infrastructure, the House Committee on Natural Resources, the House Committee on Agriculture and the House Committee on Ways and Means. The bill was reported to the House on June 5, 2009 (H. Rept. 111–137).

The bill was discharged by the House Committee on Foreign Affairs and the House Committee on Education and Labor on June 5, 2009. The bill was discharged by the House Committee on Financial Services, the House Committee on Science and Technology, the House Committee on Transportation and Infrastructure, the House Committee on Natural Resources, the House Committee on Agriculture and the House Committee on Ways and Means on June 19, 2009. H.R. 2454 was passed in the House on June 26, 2009 by recorded vote: 219–212 (Roll Call No. 477).

H.R. 2454 was placed on the Senate Legislative Calendar under General Orders (Calendar No. 97). No further legislative action was taken on H.R. 2454.

2.16—H.R. 2693, OIL POLLUTION RESEARCH AND DEVELOPMENT PROGRAM REAUTHORIZATION ACT OF 2010

Background and Need for Legislation

Oil spills are reported every day in the United States. Few spills are environmental disasters of national or global significance; most of the three million gallons of oil and refined petroleum product spilled into U.S. waters each year goes unnoticed by the public. Regardless of the level of public awareness in each case, natural resources such as fish, corals, marine mammals, sea turtles, birds, beaches, coastal habitats, and water quality are often negatively affected, as are the businesses and industries which depend on the immediate and long-term health of these resources.

The United States has incorporated lessons learned from past spills into Federal law and relevant response readiness practices. We now have response tools and trained personnel at ports and aboard vessels across the nation. However, oil recovery and clean up techniques, including in situ burns, chemical dispersants, skimmers, and booms have changed little since the Exxon Valdez oil spill of 1989.

The Oil Pollution Act (OPA 90), P.L. 101–380 (8–18–1990), was signed into law in August 1990, largely in response to rising public concern following the Exxon Valdez oil spill. The intent of OPA 90 was to improve the nation’s ability to prevent and respond to oil spills by establishing provisions that expand the Federal government’s ability to respond to oil spills, and provide the funding and resources necessary for an adequate response.

Title VII of OPA 90 establishes an Interagency Coordinating Committee on Oil Pollution Research to coordinate a comprehen-
sive program of oil pollution research, technology development, and demonstration among the Federal agencies, in cooperation and coordination with industry, universities, research institutions, state governments, and other nations, as appropriate, and to foster cost-effective research mechanisms, including the joint funding of research. Fourteen Federal partners are named as members of the Interagency Committee, and a representative of the Coast Guard serves as Chairman.

This program provides for research, development, and demonstration of new or improved technologies which are effective in preventing or mitigating oil discharges and which protect the environment, including oil pollution technology evaluation, oil pollution effects research, marine simulation research, demonstration projects, simulated environmental testing, and regional research programs.

Few legislative modifications to OPA 90’s research and development program have been made since its enactment, and appropriations for these provisions have been small in comparison to the need. The response to the Deepwater Horizon disaster in the Gulf of Mexico has exposed the need for an effective and coordinated research program for oil spill response.

The purpose of H.R. 2693, the *Oil Pollution Research and Development Program Reauthorization Act of 2010*, is to amend and reauthorize the *Oil Pollution Act of 1990*. The bill authorizes the establishment of the Interagency Coordinating Committee on Oil Pollution Research and coordination of a comprehensive program of oil pollution research, technology development, and demonstration program authorized under OPA 90 to ensure the ongoing development of methods and technologies to prevent, detect, recover, and mitigate oil discharges.

**Legislative History**

H.R. 2693 was introduced by Representative Lynn Woolsey on June 3, 2009. The bill was referred to the House Committee on Science and Technology on June 3, 2009. The bill was referred to the Subcommittee on Energy and Environment on June 4, 2009. The Subcommittee met to consider H.R. 2693 on June 16, 2009. The full committee met to consider H.R. 2693 on July 14, 2010. H.R. 2693 was reported to the House on July 21, 2010 (H. Rept. 111–553). H.R. 2693 passed the House on July 21, 2010 by voice vote.

On July 22, 2010, H.R. 2693 was referred to the Senate Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 2693.

2.17—H.R. 2729, TO AUTHORIZE THE DESIGNATION OF NATIONAL ENVIRONMENTAL RESEARCH PARKS BY THE SECRETARY OF ENERGY, AND FOR OTHER PURPOSES

**Background and Need for Legislation**

The National Environmental Research Parks (NERPs) are unique outdoor laboratories that provide opportunities for environmental studies on protected lands around Department of Energy (DOE) facilities. They offer secure settings for long-term research
on a broad range of subjects, including biomass production, environmental remediation, plant succession, population ecology, ecological restoration, climate change and thermal effects on freshwater ecosystems. The Parks also provide rich environments for training researchers and introducing the public to ecological sciences.

The seven National Environmental Research Parks are located within six major ecological regions of the United States, covering more than half of the nation. The mission of the Parks is to: conduct research and education activities to assess and document environmental effects associated with energy and weapons use; explore methods for eliminating or minimizing adverse effects of energy development and nuclear materials on the environment; train people in ecological and environmental sciences; and educate the public. A number of long-term data sets have been gathered and maintained by researchers working at the Parks. These long-term data sets are available nowhere else in the U.S. or in the world and include information on amphibian populations, bird populations, prairie succession and restoration, and soil moisture and plant water stress. These data are uniquely valuable for the detection of medium and long-term variability and changes in ecology and climate. They also provide valuable baseline information for assessing short and long-term effects of energy development activities, pollution exposures, pollution remediation, and other land-use changes.

Over the years since their establishment, there have been thousands of scientific papers published on the environmental studies done at the NERPs. The research at these sites has been conducted by DOE scientists, scientists from other federal agencies, universities and private foundations.

The maintenance of the Parks by DOE meets the Department’s statutory obligations to promote sound environmental stewardship of federal lands and to safeguard sites containing cultural and archaeological resources. However, the Parks themselves have never been formally authorized and currently have no designated source of funding within the federal government. Research and outreach activities have been coordinated on an ad hoc basis to date. H.R. 2729 addresses each of these issues. The purpose of H.R. 2729 is to authorize the existing National Environmental Research Parks as permanent research reserves and provide guidance for research, education, and outreach activities to be conducted on or in collaboration with the Parks.

Legislative History

H.R. 2729 was introduced by Representative Ben Luján on June 4, 2009. The bill was referred to the House Committee on Science and Technology on June 4, 2009 and to the Subcommittee on Energy and Environment on June 10, 2009. The Subcommittee met to consider H.R. 2729 on June 16, 2009. The full committee met to consider H.R. 2729 on June 24, 2009. H.R. 2729 was reported to the House on July 14, 2009 (H. Rept. 111–207). H.R. 2729 passed the House on July 21, 2009 by recorded vote: 330–96 (Roll Call No. 597).
On July 22, 2009, H.R. 2729 was referred to the Senate Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 2729.

2.18—H.R. 2965, SBIR/STTR REAUTHORIZATION ACT OF 2009

Background and Need for Legislation

In 1982, Congress passed the Small Business Innovation Development Act which established the SBIR program. The intent of the Act was to increase government funding of small, innovative companies for the performance of research and development with commercial potential. Supporters of the SBIR program argued that while small companies were highly innovative, such firms were underrepresented in federal R&D activities.

The potential of small companies to be sources of significant innovation led Congress to establish the SBIR program. From the program’s original development, however, SBIR has been intended to stimulate technological innovation related to each participating agency’s goals and mission, use small businesses for federal R&D needs and increase private sector commercialization of innovations derived from federal R&D expenditures. To meet these objectives, the Act required that Federal departments with an extramural research budget of $100 million or more to set aside a small percentage of their agency’s overall research budget and award technology development contracts to small firms. The percentage of R&D activities to be conducted by small firms has increased since the Act was originally passed and now stands at 2.5 percent.

A key element of the SBIR program is that it establishes a three-phase development system for participants. During Phase One, participating agencies fund a proposed idea to determine if it has scientific and technical merit and is feasible. Projects that demonstrate potential after the initial endeavor can compete for Phase Two awards (lasting one to two years) to perform the principal R&D. Generally, Phase One and Phase Two awards may not exceed $100,000 and $750,000, respectively. A third phase of the program, aimed at the commercialization of a product or process developed in the earlier phases, is intended to be funded by the private sector.

Legislative History

H.R. 2965 was introduced by Representative Jason Altmire on June 19, 2009. The bill was referred to the Committee on Small Business and to the Committee on Science and Technology on June 19, 2009.

The Committee on Science and Technology met to consider the bill on June 24, 2009. The Committee voted to report the bill, as amended, to the House by a voice vote. The Committee on Small Business met to consider the bill on June 25, 2009. The Committee voted to report the bill, as amended, to the House by a recorded vote of 22–0. The bill was reported to the House on by the Committee on Small Business on June 26, 2009 (H. Rept. 111–190, Part I). The bill was reported to the House on by the Committee on Science and Technology on July 7, 2009 (H. Rept. 111–190, Part II).
H.R. 2965 was considered by the House on July 8, 2009. H.R. 2965 passed by recorded vote of 386–41 (Roll Call No. 486).

H.R. 2965 was received in the Senate on July 9, 2009. The Senate struck all after the Enacting Clause, substituted the language of S. 1233, as amended, and passed the bill by unanimous consent. On July 14, 2009 a message of the Senate action was sent to the House. Further action was taken on H.R. 2965, however, the bill no longer dealt with SBIR or STTR, but rather, unrelated issues not within the jurisdiction of the Committee on Science and Technology.

2.19—H.R. 3029, TO ESTABLISH A RESEARCH, DEVELOPMENT, AND TECHNOLOGY DEMONSTRATION PROGRAM TO IMPROVE THE EFFICIENCY OF GAS TURBINES USED IN COMBINED CYCLE AND SIMPLE CYCLE POWER GENERATION SYSTEMS

Background and Need for Legislation

Natural gas is playing an increasingly important role in the nation's electric generation portfolio. Gas-fired plants now comprise about 20% of the total electric generation portfolio in the U.S. after falling from 24% in 1970 to 12% in 1985. The majority of electric generation capacity additions in the last decade have been gas-fired. For example, the Energy Information Administration (EIA) reported that, in 2000, of the 23,453 megawatts of total new electric capacity added in the U.S. almost 95 percent, or 22,238 MW were natural gas-fired additions. In 2009 it is estimated that over 50 percent of additions will be gas-fired. Given the likelihood of tightening environmental regulations on power plants and the recent confirmation of sizeable new domestic natural gas resources, the EIA estimates that natural gas-fired electricity generation will increase dramatically over the next 20 years.

Efficiency enhancements for both combined cycle and simple cycle gas turbine units could result in significantly reduced natural gas usage and emissions. For example, General Electric estimates that a one-percentage point improvement in efficiency applied to its existing F Class fleet would result in CO₂ emission reductions of 4.4 million tons per year, while also providing savings of more than a billion dollars per year in fuel costs.

In 1992, the Department of Energy, through the Office of Fossil Energy and the Office of Energy Efficiency & Renewable Energy, developed the Advanced Turbine Systems Program to address a temperature barrier that, for all practical purposes, capped efficiencies for turbine-based power generating systems. Above 2300 degree F, conventional cooling technologies were insufficient to protect the turbine blades and other internal components from heat degradation. Because higher temperatures generally correlate with higher efficiencies (i.e. faster turbine speeds), this effectively limited the generating efficiency at which a turbine power plant could convert the energy in the fuel into electricity.

Nine years after the development of the Advanced Turbine Systems Program, the Department of Energy and its private partners produced 'breakthrough' turbine systems that pushed firing temperatures to 2,600 degrees F and permitted combined cycle effi-
ciencies that surpassed 60%. Among the innovations that emerged from the Department’s Advanced Turbine Systems program were single-crystal turbine blades and thermal barrier coatings (TBC) that could withstand the high inlet temperatures, along with new firing techniques to stabilize combustion and minimize nitrogen oxide formation.

H.R. 3029 directs the Secretary of Energy to carry out a research, development, and technology demonstration program to improve the efficiency of gas turbines used in power generation systems and to identify the technologies that will lead to gas turbine combined cycle efficiency of 65% or simple cycle efficiency of 50%. The bill requires the program to support first-of-a-kind engineering and detailed gas turbine design for megawatt-scale and utility-scale electric power generation, include technology demonstration through component testing, subscale testing, and full scale testing in existing fleets, include field demonstrations of the developed technology elements to demonstrate technical and economic feasibility, assess overall combined cycle and simple cycle system performance, and directs the Secretary, in selecting program proposals, to emphasize the extent to which the proposal will stimulate the creation or increased retention of jobs in the United States and promote and enhance U.S. technology leadership.

Legislative History

H.R. 3029 was introduced by Representative Paul Tonko on June 24, 2009. The bill was referred to the House Committee on Science and Technology on June 24, 2009 and to the Subcommittee on Energy and Environment on June 25, 2009.

The Committee on Science and Technology met to consider the bill on June 29, 2009. The Committee voted to report the bill, as amended, to the House by voice vote. The Committee on Science and Technology reported H.R. 3029, as amended, to the House on December 1, 2009 (H. Rept. 111–343). On December 1, 2009 the House suspended the rules and passed H.R. 3029 by a recorded vote of 266–118 (Roll Call No. 911).

The bill was received in the Senate on December 2, 2009 and referred to the Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 3029. Also note that the substance of H.R. 3029 passed the House as a component of H.R. 2454.

2.20—H.R. 3165, WIND ENERGY RESEARCH AND DEVELOPMENT ACT OF 2009

Background and Need for Legislation

The purpose of H.R. 3165 is to authorize a comprehensive research, development, and demonstration program to advance wind energy technologies.

According to a Department of Energy (DOE) report published in May 2008 entitled 20% Wind Energy by 2030, a much greater proportion of the nation’s demand for electrical energy could be provided by exploiting our land-based and offshore wind resources. However, to expand from today’s proportion of electric generation from wind (less than 2 percent) to a scenario where the U.S. gen-
erates 20 percent or more of its power from wind energy requires several significant advances including: improved wind turbine technology, improved wind forecasting capability, improved energy storage, and expansion of transmission systems to deliver wind power from resource centers to centers of population. In turn, these changes in the power generation and delivery process may involve changes in manufacturing, policy development, and environmental regulation.

Overall performance of wind energy systems can be substantially improved to become more efficient, cost-effective, and reliable. Fundamental technical issues remain even while wind power is competitive with coal and other conventional forms of energy in some markets. As a follow-up to DOE’s wind energy report, the American Wind Energy Association (AWEA) Research and Development Committee produced a detailed Action Plan to 20% Wind Energy by 2030 in March 2009. This plan proposed $217 million in annual federal funding combined with a $224 million industry/state cost share to support specific research and development programs which the AWEA Committee believes are necessary to meet a goal of providing 20 percent of America’s electricity from wind by 2030.

This would be a significant increase from the DOE wind program’s current annual budget of roughly $50 million, notwithstanding the one-time expenditure of $118 million currently identified by the Department for additional wind research and development activities from the American Recovery and Reinvestment Act of 2009. In recent years much of the federal wind program has focused on testing and evaluation of commercial turbines rather than advanced research, leading to gaps in our national wind R&D portfolio. There is broad consensus among government, academic, and industry leaders that research areas in which greater federal support could have a considerable impact include: new materials and designs to make larger, lighter, less expensive, and more reliable rotor blades; advanced generators to improve the efficiency of converting blade rotation to electric power; automation, production materials, and assembly of large-scale components to reduce manufacturing costs; low-cost transportable towers greater than 100 meters in height to capitalize on improved wind conditions at higher elevations; advanced computational tools to improve the reliability of aeroelastic simulations of wind energy systems; and advanced control systems and blade sensors to improve performance and reliability under a wide variety of wind conditions.

H.R. 3165 authorizes research targeted to fulfill these areas of needed research. Providing federal support to address areas of common need for the wind industry will help us to reach the goal of increasing the proportion of electrical generation from wind resources.

Legislative History

H.R. 3165 was introduced by Representative Paul Tonko on July 9, 2009. The bill was referred to the House Committee on Science and Technology on July 9, 2009 and to the Subcommittee on Energy and Environment on July 14, 2009. The Committee met to consider H.R. 3165 on July 29, 2009. The Committee voted to re-
port the bill, as amended, to the House on July 29, 2009 by voice vote.

The Committee on Science and Technology reported H.R. 3165, as amended, to the House on September 8, 2009 (H. Rept. 111–248). On September 8, 2009 the House suspended the rules and passed H.R. 3165, as amended, by voice vote.

H.R. 3165 was received in the Senate on September 10, 2009 and referred to the Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 3165.

2.21—H.R. 3246, ADVANCED VEHICLE TECHNOLOGY ACT OF 2009

Background and Need for Legislation

The purpose of H.R. 3246 is to provide for a program of research, development, demonstration and commercial application in vehicle technologies at the Department of Energy.

For over two decades the Department of Energy has funded a wide range of research activities on passenger vehicles and heavy-duty trucks through its Vehicle Technologies program. The program’s mission is to develop leap frog technologies that will provide Americans with greater freedom of mobility and energy security, while lowering costs and reducing impacts on the environment. Most recently, the Department of Energy has addressed these research needs through two public-private research programs: The 21st Century Truck Partnership (21CTP), which conducts research and development through collaborations with the heavy-duty trucking industry, and the FreedomCar and the Hydrogen Fuel Initiative programs, which engages in pre-competitive, high-risk research needed to develop technologies that will apply to a range of affordable passenger cars and light trucks.

Over the last decade, federal research priorities have shifted between passenger and heavy-duty vehicles, as well as diesel-hybrids, hydrogen-fueled, and battery-powered drive systems. While the various programs have had some successes in transferring component technologies to the marketplace, critics contend that previous Administrations have adopted an inconsistent winner-take-all approach to vehicle research where one technology or platform receives the large bulk of funding, only to have funding cut before the programs can reasonably be expected to develop commercially viable technologies. It is argued that what is needed is long-term sustained funding on a broad range of areas from near-commercial technologies to exploratory research on systems with the potential to revolutionize transportation in the U.S. Striking the appropriate research balance and strengthening the federal commitment in this area is especially critical at a time when both the automotive and commercial trucking industries have limited resources for increasingly expensive research and development.

Legislative History

H.R. 3246 was introduced by Representative Gary Peters on July 17, 2009. The bill referred to the House Committee on Science and Technology on July 17, 2009 and referred to the Subcommittee on Energy and Environment on July 21, 2009. The Committee met to
consider the bill on July 29, 2009. The Committee voted to report
the bill to the House on July 29, 2009 by voice vote.

The Committee on Science and Technology reported H.R. 3246 on
July 11, 2009 (H. Rept. 111–254). The House considered H.R. 3246
on September 16, 2009. Representative Gordon offered an amend-
ment, which was adopted by voice vote. Representative Hall offered
an amendment, the amendment failed by a recorded vote of 179–
253 (Roll Call No. 705). Representative Broun offered an amend-
ment which was agreed to by voice vote. Representative Peters of-
fered an amendment which was agreed to by voice vote. Representa-
tive Posey offered an amendment which was agreed to by voice
vote. Representative Gordon offered an amendment which was
agreed to by voice vote. Representative Marshall offered an amend-
ment which was agreed to by voice vote. Representative Cohen of-
fered an amendment which was agreed to by voice vote. Representa-
tive Donnelly offered an amendment which was agreed to by re-
corded vote of 369–62 (Roll Call No. 706). Representative Altmire
offered an amendment which was agreed to by voice vote. Repre-
sentative Massa offered an amendment which was agreed to by
recorded vote of 416–14 (Roll Call No. 707).

The House passed H.R. 3246, as amended, on September 16,
2009 by a recorded vote of 312–114 (Roll Call No. 709).

H.R. 3246 was received in the Senate on September 17, 2009 and
referred to the Committee on Energy and Natural Resources. No
further legislative action was taken on H.R. 3246.

2.22—H.R. 3247, TO ESTABLISH A SOCIAL AND BEHAVIORAL
SCIENCES RESEARCH PROGRAM AT THE DEPARTMENT
OF ENERGY, AND FOR OTHER PURPOSES

Background and Need for Legislation

H.R. 3246 directs the Secretary of Energy to establish a social
and behavioral sciences research program to identify and under-
stand social and behavioral factors influencing energy consumption
and acceptance and adoption rates of new energy technologies, and
to promote the use of the results of social and behavioral research
to improve the development and application of energy technologies,
requires the Secretary to appoint or designate a Director of Social
and Behavioral Research to carry out such program, requires the
Director to develop a research plan in consultation with the Advi-
sory Committee established by this Act and review such plan every
five years and revise it as appropriate, instructs the Secretary to
provide grants in support of social and behavioral research, and re-
quires the Advisory Committee to advise the Secretary and the Di-
rector on priority areas for research, assist the Director in the de-
velopment of the research plan; and provide other assistance and
advice as requested by the Secretary or the Director.

Legislative History

H.R. 3247 was introduced by Representative Brian Baird on July
17, 2009 and referred to the House Committee on Science and
Technology. The Committee met to consider H.R. 3247 on July 29,
2009. The Committee voted to report the bill to the House by voice
vote on July 29, 2009. No further action was taken on H.R. 3247.
2.23—H.R. 3585, SOLAR TECHNOLOGY ROADMAP ACT

Background and Need for Legislation

Solar energy constitutes the largest global energy resource. Currently the Bureau of Land Management (BLM) has 158 active solar applications, covering 1.8 million acres with a projected capacity to generate 97,000 megawatts of electricity on the public lands that have been fast-tracked for renewable energy development in six western states. These BLM solar projects could provide the equivalent of 29 percent of the nation’s household electricity use. In addition, the United States Geological Survey (USGS) estimates that 48 percent of total water withdrawals in 2000 were used for electric power generation. The combination of environmental benefits and government incentives has resulted in a boom in the growth of applications for solar energy projects on public and private lands and on residential, commercial, and municipal sites. An array of solar technologies are currently available for use in lighting, heating, and cooling (air or water) as well as to generate electricity on a wide range of scales from the residential level to utility-scale installations.

The solar industry faces a number of challenges to achieving a significant, stable domestic energy supply for U.S. consumers while meeting greenhouse gas emission reduction targets. Reaching these goals will require the coordination of the solar energy technology research and manufacturing supply chains. The U.S. solar industry faces a number of barriers to entry in energy supply markets. Utilities are justifiably risk-averse and need access to best practices and expertise in order to efficiently integrate solar loads especially in urban areas.

The United States has a long history of leadership in solar energy technology, in part due to the development of photovoltaic technologies for space applications. To help accelerate the widespread deployment of solar technologies in the U.S., the Administration recently dedicated $118 million in Recovery Act funds to projects administered by the DOE solar program. This program currently has a base annual budget of roughly $200 million. In reviewing ways to support the long-term growth of a domestic solar manufacturing industry the semiconductor industry may provide a model for partnership on R&D between government and the private sector.

In the case of semiconductors, in the mid-1980s the U.S.—and the Department of Defense in particular—became concerned that Japanese semiconductor manufacturers were limiting access to semiconductor chips for two years or longer, delaying or halting the progress of technological advancement. In order to protect its strategic interest in advancing electronics the U.S. opted to support the growth of a domestic semiconductor industry through support for a semiconductor manufacturing technology research consortium. Sematech was created along with a National Technology Roadmap for Semiconductors.

These two activities brought together key players within the industry, from semiconductor manufacturers to manufacturing equipment builders and members of the semiconductor materials supply chain. This model of coordination and collaboration helped to keep
the technology moving forward at a quick pace, encouraged the indus-
try to adopt cost and time-saving standards, and helped to elimi-
nate the duplication of research efforts on pre-competitive tech-
technologies through communication and coordination. The U.S.
continues to host some of the world’s most prominent semi-
conductor companies including Intel, AMD, National Semicon-
ductor, and Texas Instruments.

While there are American solar companies that have emerged as
strong players in the world solar market, they do not have the re-
sources to individually support long-term research, development,
and commercial application of new solar technologies while sus-
taining rapid growth and expanding production capacity. Addition-
ally, significant obstacles in the approval process for siting, con-
structing and operating new solar facilities has further stymied in-
dustry’s pursuit of cutting edge technological advances. A jointly-
developed comprehensive solar technology plan with public and pri-
vate support may provide a framework for strengthening U.S. lead-
ership in renewable energy technology.

H.R. 3585, the Solar Technology Roadmap Act, directs the Sec-
retary of Energy to conduct a program of research, development,
and demonstration for solar technology, requires the Secretary to
provide awards on a merit-reviewed, competitive basis to promote
a diversity of research, development, and demonstration activities
for solar technology, calls for at least 75% of funding for such ac-
tivities conducted by DOE after FY2014 to support a diversity of
activities identified by and recommended under a Solar Technology
Roadmap, directs the Secretary to establish and provide support for
a Solar Technology Roadmap Committee, requires the Secretary to
award multiyear grants on a merit-reviewed, competitive basis for
research, development, and demonstration activities to create inno-

vative and practical approaches to increase reuse and recycling of
photovoltaic devices and contribute to the professional development
of scientists, engineers, and technicians in the fields of photovoltaic
and electronic device manufacturing, design, refurbishing, and re-
cycling, and requires the results of such activities to be made pub-
licly available.

Legislative History

H.R. 3585 was introduced by Representative Gabrielle Giffords
on September 16, 2009 and referred to the House Committee on
Science and Technology. The Committee met to consider H.R. 3585
on October 7, 2009. The Committee voted to report the bill, as
amended, to the House by voice vote on October 7, 2009.

The Committee on Science and Technology reported the H.R.
3585, as amended, to the House on October 15, 2009 (H. Rept. 111–
302). The House considered H.R. 3585 on October 22, 2009. Rep-
resentative Gordon offered a manager’s amendment, which was
agreed to by a voice vote. Representative Hastings offered an
amendment, which was agreed to by a voice vote. Representative
Cardoza offered an amendment, which was agreed to by a voice
vote. Representative Marshall offered an amendment, which was
agreed to by a voice vote. Representative Murphy offered an
amendment, which was agreed to by a voice vote. Representative
Broun offered an amendment, which failed by recorded vote of 162–
Representative Kaptur offered an amendment, which was agreed to by a recorded vote of 395–24 (Roll Call No. 802). Representative Klein offered an amendment, which agreed to by a recorded vote of 414–5 (Roll Call No. 803). Representative Titus offered an amendment, which was agreed to by a recorded vote of 407–9 (Roll Call No. 804). Representative Heinrich offered an amendment, which was agreed to by a recorded vote of 420–0 (Roll Call No. 805). Representative Himes offered an amendment, which was agreed to by a recorded vote of 410–6 (Roll Call No. 806). The House passed H.R. 3585 by a recorded vote of 310–106 (Roll Call No. 807) on October 22, 2009.

H.R. 3585 was received in the Senate on October 26, 2009 and referred to the Senate Committee on Energy and Natural Resources on December 8, 2009. No further legislative action was taken on H.R. 3585.

2.24—H.R. 3598, ENERGY AND WATER RESEARCH INTEGRATION ACT

Background and Need for Legislation

The purpose of H.R. 3598 is to ensure consideration of water intensity in the Department of Energy’s energy research, development, and demonstration programs where appropriate, and to help assure efficient, reliable, and sustainable delivery of energy and water resources.

According to the National Science and Technology Council Committee on Environment and Natural Resources’ Subcommittee on Water Availability and Quality report, A Strategy for Federal Science and Technology to Support Water Availability and Quality in the United States, there is a need for coordinated science and technology efforts to better understand water supply and demand in the United States. In addition, the Committee understands the Department of Energy will issue a draft energy-water research roadmap outlining a number of research and development challenges in this area. Finally, the recent Government Accountability Office report, Electricity and Water: Improvements to Federal Water Use Data Would Increase Understanding of Trends in Power Plant Water Use, underscores the need for improvements in federal water use data to help increase the understanding of trends in power plant water use.

Energy and water are directly linked. Water is essential for energy generation and fuel production—it is used in energy resource extraction, refining, processing, transportation, hydroelectric generation, thermoelectric power plant cooling and emissions scrubbing. Equally important is the energy needed for water pumping, treatment, distribution and end-use requirements. Furthermore, climate variability and demand growth affect both our water and energy resources. Accordingly, it is important to recognize this interdependency and develop technologies and adopt practices that allow us to manage these resources effectively. Thermoelectric power, oil, natural gas, oil shale, and renewable energy, including solar power and biofuels, are all important areas for energy and water research integration.
As our population grows, our demand for water continues to rise while supplies become scarcer. In water-stressed areas of the United States, power plants will increasingly compete with other sectors of the economy and end-users for water resources. In addition, energy and water-related regulatory policy may add to the challenge of operating our existing power plants and permitting new thermoelectric power plants.

As future demands for energy and water continue to grow, the reliability of our energy and water supplies is likely to be an increasing challenge. As water use decisions become more difficult a comprehensive research, development and demonstration strategy would help to ensure we are well-equipped to prevent energy and water supply disruptions.

H.R. 3598 authorizes research addressing these issues by directing the Secretary of Energy to integrate energy-related water issues into energy research, development and demonstration programs at the Department of Energy.

Legislative History

H.R. 3598 was introduced on September 17, 2009 by Representative Bart Gordon. The bill was referred to the House Committee on Science and Technology on September 17, 2009 and referred to the Subcommittee on Energy and Environment on September 18, 2009. The full Committee met to consider the bill on October 7, 2009. The Committee voted to report the bill, as amended to the House on October 7, 2009.

The Committee on Science and Technology reported H.R. 3598, as amended, to the House on December 1, 2009 (H. Rept. 111–344). The House suspended the rules and voted to pass H.R. 3598 by a voice vote on December 1, 2009.

H.R. 3598 was received in the Senate on December 2, 2009 and referred to the Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 3598.

2.25—H.R. 3618, CLEAN HULL ACT OF 2009

Background and Need for Legislation

The fouling of a vessel’s surface can produce many serious consequences. For example, fouling on a vessel’s hull increases the ship’s weight and slows it progress through the water, causing the vessel to burn additional fuel. Untreated, a deep draft tank vessel’s hull can accumulate up to 6,000 tons of fouling material in less than six months of exposure to sea water. Such fouling can increase a vessel’s fuel consumption by up to 40 percent, causing significant economic and environmental impacts. Antifouling is the process of removing or preventing the accumulation of biological fouling organisms. It is estimated that total expenditures on antifouling applications for commercial and recreational vessels exceeds $700 million a year. Biological fouling is defined by the International Maritime Organization (IMO) as the unwanted accumulation of microorganisms, algae, mussels, plats, or other ‘biological material’ on structures that are ‘immersed in water’. There are more than 4,000 species of biological organisms that can foul an immersed surface.
In the 1960s, antifouling coatings based on tributyltin (TBT) were developed. This product was so successful that, by the 1970s, it was the standard antifouling application throughout the shipping industry. As the number of vessels using antifouling paints containing TBT increased, scientists began to find high concentrations of TBT in marinas, ports and harbors that had a large number of boats and vessels. Eventually, high TBT levels were discovered in the open seas and oceanic waters. TBT has been noted as the most toxic substance ever deliberately introduced into the marine environment.

In October 2001, IMO adopted the International Convention on the Control of Harmful Anti-fouling Systems on Ships, which entered into force on September 17, 2008, after 25 States representing 25 percent of the international commercial shipping tonnage adopted the Convention. Countries that became parties to the Convention were required to ban the new application of TBT coatings by January 1, 2003 and to ensure that all vessels that had a TBT-based coating removed the coating or covered it with a barrier through which it could not leach by January 1, 2008. Parties to the Convention must also ensure that no vessel of a party using antifouling paint containing TBT will be allowed in their ports, shipyard, or offshore terminal.

In the United States, antifouling systems containing organotins, including TBT, are currently regulated under the Organotin Anti-Fouling Paint Control Act of 1988 (OAPCA), 33 U.S.C. Sec. 2401–2410 (2009). The OAPCA prohibits organotin-based antifouling paints on vessels less than 25 meters (excluding aluminum hulls, outboard motors, and external drive units), and limits the leaching rate of antifouling paints on larger vessels. Under the OAPCA, the sale, purchase, and application of antifouling paint containing organotins were banned.

In 2008, the Senate ratified the Convention and the Bush administration submitted draft legislation to implement the requirements of the Convention for purposes of U.S. law. The United States will not become a party to the Convention until implementing legislation is enacted. It is important for the United States to become a party to the Convention to not only replace the OAPCA, but also to ban vessels using antifouling paint containing TBT from entering the country and continuing to pollute the marine environment.

H.R. 3618, the Clean Hull Act of 2009, provides for the implementation of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships 2001, and for other purposes.

Legislative History

H.R. 3618 was introduced by Representative James Oberstar on September 22, 2009 and referred to the Committee on Transportation and Infrastructure and to the Committee on Science and Technology.

The Committee on Transportation and Infrastructure met to consider H.R. 3618 on September 24, 2009. The Committee voted to report the bill to the House, as amended, on September 24, 2009. The Committee on Science and Technology referred the bill to the Subcommittee on Energy and Environment on September 23, 2009. The Committee on Science and Technology discharged the bill on

The House suspended the rules and passed H.R. 3618 by voice vote on November 17, 2009.

H.R. 3618 was received in the Senate on November 18, 2009 and referred to the Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 3618.

2.26—H.R. 3650, HARMFUL ALGAL BLOOMS AND HYPOXIA RESEARCH AND CONTROL AMENDMENTS ACT OF 2010

Background and Need for Legislation

The purpose of H.R. 3650, the Harmful Algal Blooms and Hypoxia Research and Control Amendments Act of 2010, is to establish a National Harmful Algal Bloom and Hypoxia Program to develop and coordinate a comprehensive and integrated strategy to address harmful algal blooms and hypoxia, and to provide for the development and implementation of regional action plans to reduce harmful algal blooms and hypoxia.

Harmful algal blooms (HABs) and hypoxia (severe depletion of oxygen) are one of the most scientifically complex and economically significant coastal management issues facing the nation. In the past, few regions of the U.S. were affected by HABs. Now, all U.S. coastal regions have reported major blooms and hypoxic events. These phenomena have devastating environmental, economic, and human health impacts. Impacts include human illness and mortality following direct consumption or indirect exposure to toxic shellfish or toxins in the environment; economic hardship for coastal economies, many of which are highly dependent on tourism or harvest of local seafood; as well as dramatic fish, bird, and mammal mortalities. There are also devastating impacts to ecosystems, leading to environmental damage that may reduce the ability of those systems to sustain species due to habitat degradation, increased susceptibility to disease, and long-term alterations to community structure.

Scientific understanding of harmful algal blooms and hypoxic events has improved significantly since the early 1990s. However, there is a need for additional efforts in monitoring, prevention, control and mitigation of these complex phenomena. Practical and innovative approaches to address hypoxia and HABs in U.S. waters are essential for management of aquatic ecosystems and to fulfill a stronger investment in the health of the coasts, oceans, and waterways.

Recognizing this need, in 2004 Congress reauthorized and expanded the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (Public Law 105–383) by passing the Harmful Algal Bloom and Hypoxia Amendments Act of 2004 (Public Law 108–456). The 1998 Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRA) established an Interagency Task Force to develop a national HABs assessment and authorized funding for existing and new research programs on HABs. These programs involve federal, state, and academic partners and support interdisciplinary extramural research studies to address the issues
of HABs in an ecosystem context. HABHRCA, reauthorized in 2004, required assessments of HABs in different coastal regions and the Great Lakes and plans to expand research to address the impacts of HABs. The law also authorized research, education, and monitoring activities related to the prevention, reduction, and control of harmful algal blooms and hypoxia, and reconstituted the Interagency Task Force on HABs and Hypoxia.

The 2004 reauthorization also directed NOAA to produce several reports and assessments in addition to authorizing funding for both new and existing programs and activities. The Prediction and Response Report, released in September 2007, addresses both the state of research and methods for HAB prediction and response, especially at the federal level. The National Scientific Research, Development, Demonstration, and Technology Transfer Plan for Reducing Impacts from Harmful Algal Blooms (RDDTT Plan) establishes research priorities to develop and demonstrate prevention, control and mitigation methods to advance current prediction and response capabilities. The law also required development of local and regional Scientific Assessment of Hypoxia and a Scientific Assessment of Harmful Algal Blooms.

The HABHRCA authorized funds were directed to conduct research and seek to control HABs and hypoxia in U.S. marine waters, estuaries and the Great Lakes. The 2004 reauthorization also required a report on The Scientific Assessment of Freshwater Harmful Algal Blooms that describes the state of knowledge of HABs in U.S. inland and freshwaters, and presents a plan to advance research and reduce the impacts on humans and the environment. There is a continued need to research and respond to HABs in marine waters, the Great Lakes, and in inland waterways, such as rivers, lakes and reservoirs.

The Environmental Protection Agency (EPA) oversees a wide array of programs specifically designed to protect and preserve the coastal and marine waters of the United States, including watershed protection programs working through partnerships and an array of regulatory programs. In conjunction with its statutory responsibilities to ensure water quality under the Clean Water Act and the Safe Drinking Water Act, EPA has a program of research and development on water treatment technologies, health effects of water pollutants, security from deliberate contamination, and watershed protection.

EPA and the National Oceanic and Atmospheric Administration (NOAA) are co-leads of a Federal Workgroup of thirteen federal agencies committed to supporting the Gulf of Mexico Alliance, a partnership formed by the five Gulf State Governors. In addition, EPA is also a participating member of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. However, at present, there is a lack of significant federal research and development aimed at addressing freshwater HABs. Because of the agency's complementary work on inland water ecosystems, the EPA is a logical federal entity to partner with NOAA to develop and implement a research, development, and demonstration program to address freshwater harmful algal blooms and hypoxia through research, monitoring, prevention, mitigation, and control. As the lead agency with oversight over freshwater quality, the EPA should ensure the
protection of aquatic ecosystems to protect human health, support economic and recreational activities, and provide healthy habitat for fish, plants, and wildlife by conducting research to develop HAB prevention, control and mitigation technologies.

Addressing the many dimensions of HABs requires a coordinated multi-agency approach, and there are presently a number of programs and agencies that address the various aspects of HABs. However, there is a need to expand Harmful Algal Blooms research to include both marine and freshwaters. The reauthorization of the HABHRCA should address both marine and freshwater blooms and hypoxia by building upon and utilizing the findings and results of various reports and assessments to formulate national and regional action strategies.

Legislative History

H.R. 3650 was introduced by Representative Brian Baird on September 25, 2010. The bill was referred to the Committee on Science and Technology, and in addition to the Committee on Natural Resources. The Committee on Science and Technology met to consider the bill on October 10, 2009. The Committee on Science and Technology voted to report H.R. 3650, as amended, to the House on October 7, 2010. On January 13, 2010, the Committee on Natural Resources discharged the bill and the Committee on Science and Technology reported H.R. 3650, as amended to the House (H. Rept. 111–396, Part I).

On March 9, 2010 the House suspended the rules and voted on H.R. 3650, which failed by a recorded vote of 263–142 (Roll Call No. 92). On March 12, 2010 the House considered H.R. 3650 under a structured rule and passed the bill, as amended, by a recorded vote of 251–103 (Roll Call No. 109).

H.R. 3650 was received in the Senate on March 15, 2010. No further legislative action was taken on H.R. 3650.

2.27—H.R. 3791, FIRE GRANTS REAUTHORIZATION ACT OF 2009

Background and the Need for Legislation

The purpose of H.R. 3791, the Fire Grants Reauthorization Act of 2009, is to reauthorize the Assistance to Firefighters Grant (AFG) Program and the Staffing for Adequate Fire and Emergency Response (SAFER) Grant Program.

Since the AFG program began in FY2001, over $4.8 billion in Federal funding has been competitively awarded to local fire departments to purchase firefighting and emergency response training and equipment. In FY2008, the Federal Emergency Management Agency (FEMA) received over 20,000 applications from fire departments for AFG funds, requesting over $3 billion. The program was created to assist local fire departments in meeting the challenge of expanding emergency response capabilities. Many local fire departments do not have adequate training and equipment. For instance, the National Fire Protection Association estimates that 65 percent of fire departments in the U.S. do not have enough portable radios to equip all firefighters on shift, and that 36 percent of fire departments involved in emergency medical response do
not have enough adequately trained personnel to perform those duties. The support for training, equipment, and apparatus provided by the AFG Program is especially needed to protect public safety as municipalities face severe budget constraints.

Legislative History

H.R. 3791, the Fire Grants Reauthorization Act of 2009, was introduced on October 13, 2009 by representative Harry Mitchell and referred to the House Committee on Science and Technology.

The House Committee on Science and Technology met to consider H.R. 3791 on October 21, 2009 and voted to report the bill to the House by voice vote. On November 7, 2009, the Committee on Homeland Security was referred H.R. 3791 and discharged the bill. The House Committee on Science and Technology reported the bill to the House, as amended, on November 7, 2009 (H. Rep. 111–333, Part I).

H.R. 3791 was considered by the House under the provisions of rule H. Res. 909 on November 18, 2009. Representative Titus offered an amendment, which was passed by voice vote. Representative Holden offered an amendment, which was passed by voice vote. Representative Cardoza offered an amendment, which was passed by voice vote. Representative Perlmutter offered an amendment, which was agreed to by a recorded vote of 358–75 (Roll Call No. 899), which was. Representative Flake offered an amendment, which was agreed to by a recorded vote of 371–63 (Roll Call No. 900). The House passed H.R. 3791, as amended, by a recorded vote of 395–31 (Roll Call No. 901) on November 18, 2009.

H.R. 3791 was received in the Senate on November 19, 2009 and referred to the Committee on Homeland Security and Governmental Affairs. No further legislative action was taken on H.R. 3791.

2.28—H.R. 3820, NATURAL HAZARDS RISK REDUCTION ACT OF 2010

Background and Need for Legislation

The purpose of H.R. 3820, Natural Hazards Risk Reduction Act of 2010, is to reauthorize the National Earthquake Hazards Reduction Program (NEHRP) and the National Windstorm Impact Reduction Program (NWIRP). In addition, this bill strengthens the National Construction Safety Team Act (NCSTA) by giving the National Institute of Standards and Technology (NIST) more flexibility in implementing the Act.

The United States faces serious threats to public safety and property from natural disasters. Major California earthquakes in 1989 and 1994, Loma Prieta and Northridge respectively, killed over 100 people, injured thousands, and cost the country nearly $30 billion from property losses and economic disruption. Hurricanes Katrina and Rita most recently demonstrated that severe weather can cause death, injury, and billions of dollars in damage. Developing and implementing measures to reduce the toll of earthquakes, severe weather, wildfires, and other natural disasters is critical as more Americans move to hazard-prone regions of the country. H.R. 3820 reauthorizes and amends the National Earthquake Hazards
Reduction Program (NEHRP), the National Windstorm Impact Reduction Program (NWIRP), the National Windstorm Impact Reduction Program (NWIRP), National Construction Safety Team Act, and the Wildfires at the Wildland-Urban Interface to improve knowledge of the physical processes of natural hazards and their effects, develop methods to prepare for and mitigate the impacts of natural hazards on the built environment and communities, and to facilitate the implementation of mitigation measures to stem the mounting losses from these disasters.

Legislative History

H.R. 3820 was introduced by Representative David Wu on October 15, 2009 and referred to the House Committee on Science and Technology; House Committee on Natural Resources; and House Committee on Transportation and Infrastructure.

The Committee on Science and Technology met to consider H.R. 3820 on October 21, 2009. The Committee voted to report the bill to the House, as amended, by voice vote.

The Committee on Science and Technology reported H.R. 3820, as amended, to the House on February 26, 2010 (H. Rept. 111–424, Part I). The bill was considered under suspension of the rules by the House on March 2, 2010. The House voted to pass H.R. 3820 by a recorded vote of 335–50 (Roll Call No. 76) on March 2, 2010.

H.R. 3820 was received in the Senate on March 3, 2010 and referred to the Committee on Commerce, Science, and Transportation. No further legislative action was taken on H.R. 3820.

2.29—H.R. 4061, THE CYBERSECURITY ENHANCEMENT ACT OF 2010

Background and Need for Legislation

Information technology (IT) has evolved rapidly over the last decade, leading to markedly increased connectivity and productivity. The benefits provided by these advancements have led to the widespread use and incorporation of information technologies across major sectors of the economy. This level of connectivity and the dependence of our critical infrastructures on IT have also increased the vulnerability of these systems. Reports of cyber criminals and possibly nation-states accessing sensitive information and disrupting services have risen steadily over the last decade, heightening concerns over the adequacy of our cybersecurity measures.

The Office of Management and Budget cites that federal agencies spend $6 billion on cybersecurity to protect a $72 billion IT infrastructure. In addition, the Federal government funds approximately $350 million in cybersecurity research and development (R&D) each year. Despite this Federal spending, the Government Accountability Office testified as recently as June 2009 that the U.S. IT infrastructure is vulnerable to attack and the Federal agencies tasked with its protection are not fulfilling their responsibilities.

On May 29, 2009, the Obama Administration released the Cybersecurity Policy Review, a 60-day review of cyberspace policies across the Federal government. The findings of the review include: strengthening partnerships between the Federal government and...
the private sector to guarantee a secure and reliable infrastructure, increasing public awareness of the risks associated with cybersecurity, expanding and training the Federal cybersecurity workforce, advancing cybersecurity R&D, and better coordination among Federal agencies.

Specifically, the review recommends the development of an R&D framework that focuses on strategies for innovative technologies and calls for a single entity to coordinate United States representation in international cybersecurity technical standards setting bodies. In the mid-term, it recommends that Federal agencies expand support for cybersecurity education and R&D to ensure the Nation’s continued ability to compete in the information age economy.

The task of coordinating unclassified cybersecurity R&D lies with the Networking and Information Technology Research and Development (NITRD) program, which was originally authorized in statute by the *High-Performance Computing Act of 1991* (P.L. 102–194). The NITRD program, which consists of 13 Federal agencies, coordinates a broad spectrum of R&D activities related to information technology. It also includes an interagency working group and program component area focused specifically on cybersecurity and information R&D. However, many expert panels, including the President’s Council of Advisors on Science and Technology, have argued that the portfolio of Federal investments in cybersecurity R&D is not properly balanced and is focused on short-term reactive technologies at the expense of long-term, fundamental R&D.

With a budget of $127 million for FY 2010, NSF is the principal agency supporting unclassified cybersecurity R&D and education. NSF’s cybersecurity research activities are primarily funded through the Directorate for Computer & Information Science & Engineering (CISE). CISE supports cybersecurity R&D through a targeted program, Trustworthy Computing, as well as through a number of its core activities in Computer Systems Research, Computing Research Infrastructure, and Network and Science Engineering. In addition to its basic research activities, NSF’s Directorate for Education & Human Resources (EHR) manages the Scholarship for Service program which provides funding to colleges and universities for the award of 2-year scholarships in information assurance and computer security fields.

NIST is tasked with protecting the Federal information technology network by developing and promulgating cybersecurity standards for Federal non-classified network systems (Federal Information Processing Standard [FIPS]), identifying methods for assessing effectiveness of security requirements, conducting tests to validate security in information systems, and conducting outreach exercises. Experts have stated that NIST’s technical standards and best practices are too highly technical for general public use, and making this information more usable to average computer users with less technical expertise will help raise the base level of cybersecurity knowledge among individuals, business, education, and government.

Currently, the United States is represented on international bodies dealing with cybersecurity by an array of organizations, including the Department of State, Department of Commerce, Federal Communications Commission, and the United States Trade Rep-
resentative without a coordinated and comprehensive strategy or plan. The Cyberspace Policy Review called for a comprehensive international cybersecurity strategy that defines what cybersecurity standards we need, where they are being developed, and ensures that the United States Federal government has agency representation for each. At a hearing before the Committee’s Technology and Innovation Subcommittee, witnesses stated that NIST is the appropriate Federal agency to coordinate the development of this strategy due to its status as a non-regulatory agency known and respected among international and private sector stakeholders.

In the 107th Congress, the Science and Technology Committee developed the Cyber Security Research and Development Act (P.L. 107–305). The bill created new programs and expanded existing programs at NSF and NIST for computer and network security. The authorizations established under the Cyber Security Research and Development Act expired in fiscal year 2007.

The purpose of this bill is to improve cybersecurity in the Federal, private, and public sectors through: coordination and prioritization of federal cybersecurity research and development activities; strengthening of the cybersecurity workforce; coordination of U.S. representation in international cybersecurity technical standards development; and reauthorization of cybersecurity-related programs at the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST).

Legislative History

H.R. 4061 was introduced by Representative David Lipinski on November 7, 2009 and referred to the House Committee on Science and Technology. The Committee met to consider the bill on November 18, 2009. The Committee voted to report the bill to the House, as amended, by a voice vote.

H.R. 4061 was considered under the provisions of rule H. Res. 1051 on February 2, 2010. Representative Gordon offered an amendment, which was passed by voice vote. Representative Matheson offered an amendment, which was passed by voice vote. Representative Roskam offered an amendment, which was passed by voice vote. Representative Edwards offered an amendment, which was passed by voice vote. Representative Garamendi offered an amendment, which was passed by voice vote. Representative McCarthy offered an amendment, which was passed by voice vote. Representative Sanchez offered an amendment, which was passed by voice vote. Representative Langevin offered an amendment, which was passed by voice vote. Representative Clarke offered an amendment, which was passed by voice vote. Representative Bright offered an amendment, which was passed by voice vote. Representative Kratovil offered an amendment, which was passed by voice vote. Representative Lipinski offered an amendment, which was passed by voice vote. Representative Heinrich offered an amendment, which was passed by voice vote. Representative Hastings offered an amendment, which was agreed to by a recorded vote of 417–5 (Roll Call No. 34). Representative Flake offered an amendment, which was agreed to by a recorded vote of 396–31 (Roll Call No. 35). Representative Dahlkemper of-
fered an amendment, which was agreed to by a recorded vote of 419–3 (Roll Call No. 36). Representative Cueller offered an amendment, which was agreed to by a recorded vote of 416–4 (Roll Call No. 37). Representative Connelly offered an amendment, which was agreed to by a recorded vote of 417–4 (Roll Call No. 38). Representative Halvorson offered an amendment, which was agreed to by a recorded vote of 424–0 (Roll Call No. 39). Representative Kilroy offered an amendment, which was agreed to by a recorded vote of 419–4 (Roll Call No. 40). Representative Kissell offered an amendment, which was agreed to by a recorded vote of 423–6 (Roll Call No. 41). Representative Owens offered an amendment, which was agreed to by a recorded vote of 430–0 (Roll Call No. 42). H.R. 4061 was passed by the House by a recorded vote of 422–5 (Roll Call No. 43) on February 4, 2010.

H.R. 4061 was received by the Senate and referred to the Committee on Commerce, Science, and Transportation on February 9, 2010.

2.30—H.R. 4842, HOMELAND SECURITY SCIENCE AND TECHNOLOGY AUTHORIZATION ACT OF 2010

Background and Need for Legislation

The purpose of H.R. 4842 is to authorize the Directorate of Science and Technology of the Department of Homeland Security for fiscal years 2011 and 2012.

Congress authorized the Science and Technology Directorate in the Homeland Security Act of 2002. The Domestic Nuclear Detection Office was authorized by the Security and Accountability for Every Port Act of 2006. Over the years, the Committee on Homeland Security has considered measures affecting both components, but has never passed a comprehensive, multi-year authorization like H.R. 4842.

In March 2009, on a bipartisan basis, the Committee on Homeland Security began a review of the activities of the Department’s Science and Technology Directorate and Domestic Nuclear Detection Office. The Homeland Security Act broadly authorizes the Under Secretary for Science and Technology to conduct research, development, testing, and evaluation activities for the Department, utilizing national laboratories and federally funded research and development centers, and specifically transfers a number of functions to the Under Secretary for the purposes of achieving his or her responsibilities. In reviewing the Department’s use of these authorities, the Committee determined that accountability and internal procedures, essential to the Department’s ability to perform its research and development mission, were insufficient.

The Homeland Security Science and Technology Authorization Act of 2010 addresses management, administration, and programmatic areas affecting the Science and Technology Directorate (‘S&T’) and the Domestic Nuclear Detection Office (‘DNDO’). The legislation principally emphasizes management and administrative aspects. To foster a culture that puts the needs of S&T’s customers at the forefront, and more closely align research and development activities with identified homeland security risks, the legislation directs the establishment of a more rigorous process within the S&T
Directorate for identifying, prioritizing, and funding research opportunities. The legislation places a number of additional reporting requirements on the Department to ensure compliance with the law and Congressional intent. The legislation contains several specific programmatic areas for research.

**Legislative History**

H.R. 4842 was introduced by Representative Clarke on March 13, 2010 and referred to the House Committee on Science and Technology and the House Committee on Homeland Security on March 15, 2010.

The House Committee on Homeland Security met to consider H.R. 4842 on March 16, 2010. The Committee voted to report the bill to the House by a recorded vote of 26–0. H.R. 4842 was reported to the House, as amended, on March 18, 2010. (H. Rept. 111–486, Part I). H.R. 4248 was referred sequentially to the House Committee on Science and Technology on March 18, 2010. The Committee on Science and Technology discharged the bill on June 25, 2010.

The House considered H.R. 4842 under suspension of the rules on July 20, 2010, and the bill was passed by voice vote.

H.R. 4842 was received in the Senate on July 21, 2010 referred to the Committee on Homeland Security and Governmental Affairs. No further legislative action was taken on H.R. 4842.

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2.31—H.R. 5716, SAFER OIL AND NATURAL GAS DRILLING TECHNOLOGY RESEARCH AND DEVELOPMENT ACT

**Background and Need for Legislation**

The purpose of this bill is to provide for the enhancement of existing efforts in support of research, development, demonstration, and commercial application activities to advance technologies for the safe and environmentally responsible exploration, development, and production of oil and natural gas resources.

On April 20, 2010, an explosion and fire occurred on the BP Deepwater Horizon drilling rig as it completed the final stages of an exploratory well in approximately 5,000 feet of water. The rig capsized and sank two days later, leaving an uncontrolled flow of oil and gas from the wellhead, and resulting in the largest oil spill in U.S. history. While an investigation into the exact cause of the Deepwater Horizon accident is ongoing, it is understood to be a confluence of critical human errors and the failure of certain equipment designed to stop such an incident.

Initial investigations of the Deepwater Horizon incident indicate that, in addition to a series of operator errors that compromised wellbore integrity, the highest-consequence technology failure lay in the inability of the Blowout Preventer (BOP) in immediately terminating oil and gas flow from the well. The BOP is a very large mechanism positioned at the wellhead on the seafloor and is comprised of a series of high pressure hydraulic valves designed to stop an uncontrolled flow of oil and gas from the well. As a failsafe option of last resort, a BOP includes at least one ‘blind shear ram’ which uses two blades to cut through the metal drill pipe and seal the wellbore. A BOP can be activated by personnel from the drill
rig, automatically via a ‘deadman switch’, via acoustic signal from a vessel other than the drill rig, or manually by remotely-operated vehicles (ROV). ROVs also perform a range of other deepwater functions. The crew aboard the Deepwater Horizon attempted unsuccessfully to activate the BOP before evacuating the rig, and subsequent attempts to activate the BOP using ROVs and other methods also failed. A number of stakeholders inside and outside of the industry, including the CEO of BP, have concluded that the design of blowout preventers must be rethought altogether. Witnesses at the June 9th, 2010, and June 23rd, 2010, Science and Technology Committee hearings testified about the need for industry and government-sponsored research into BOPs and a range of other accident prevention and mitigation technologies and practices.

Deepwater drilling presents a unique set of technological challenges, including for environmental and worker safety, and accident prevention and mitigation. Operations must be optimized for the extreme pressures, stresses, and temperature variations that can affect the subsea and surface equipment and architecture, drilling materials, and the hydrocarbon reservoir itself. Consequently, the industry has invested billions of dollars in researching and developing advanced drilling systems specific to the deepwater and ultra-deepwater, especially those technologies which represent an increase in production efficiency. However, many contend that the industry has not devoted comparable resources to the development of technologies and methods for accident prevention and mitigation in the deepwater. Furthermore, while the technological demands differ between onshore and offshore, the onshore industry sector, including small producers, faces similar challenges in ensuring the safe and environmentally responsible exploration and production of oil and natural gas.

Section 999 of the Energy Policy Act of 2005 authorizes the Secretary of Energy to establish an ‘Ultra-Deepwater and Unconventional Onshore Natural Gas and Other Petroleum Resources’ research and development program. Management of the 999 program was awarded to a research consortium known as the Research Partnership to Secure Energy for America (RPSEA), which is overseen for DOE by the National Energy Technology Laboratory (NETL). The program is funded through $50 million in annual mandatory spending from offshore oil and gas royalty revenues collected by the Department of Interior. Of this, DOE conducts approximately $12.5 million (25 percent) of ‘in-house’ research at NETL. The remaining $37.5 million (75 percent) is managed by the research consortium, RPSEA, and is divided into three parts: ultra-deepwater architecture and technology; unconventional onshore natural gas and other resources; and technology challenges of small producers. RPSEA currently has approximately 170 members, with representation from industry, academia, NGOs, and government laboratories and programs.

In the wake of the Deepwater Horizon tragedy, questions have arisen as to how the program activities authorized by Section 999 could better serve the nation in the development of advanced environmental and worker safety technologies and practices for oil and gas exploration and production, while also bolstering the federal
government’s technical expertise on deepwater, ultra-deepwater, and unconventional onshore drilling technologies.

Legislative History

H.R. 5716 was introduced by Representative Bart Gordon on July 13, 2010 and referred to the Committee on Science and Technology and the Committee on Natural Resources.

The Committee on Science and Technology met to consider the bill on July 14, 2010. The Committee on Science and Technology agreed to report the bill to the House by voice vote. The Committee on Science and Technology reported the bill, as amended, to the House on July 20, 2010 (H. Rept. 111–554). The Committee on Natural Resources discharged the bill on July 21, 2010.

The House considered the bill under suspension of the rules on July 21, 2010. The bill was agreed to by voice vote.

H.R. 5716 was received in the Senate on July 22, 2010. No further legislative action was taken on the bill.

2.32—H.R. 5781, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT OF 2010

Background and Need for Legislation

The purpose of the bill is to reauthorize the science, aeronautics, and human space flight and exploration programs of the National Aeronautics and Space Administration (NASA) for the fiscal years 2011, 2012, and 2013, and address space and aeronautics policy and programmatic issues.

The NASA Authorization Acts of 2005 and 2008 provided policy and programmatic guidance for NASA that made clear that NASA is and should remain a multi-mission agency with a balanced portfolio of programs in science, aeronautics, and human space flight, including human and robotic exploration beyond low Earth orbit. The NASA Authorization Act of 2010 reaffirms the basic principles espoused in the earlier NASA Authorizations while emphasizing the need to reinvigorate NASA’s capability to undertake innovative space technology and, replenish our Earth observations assets and capabilities, and restructure NASA’s existing exploration program so that it can be both executable and productive in spite of a very challenging budgetary environment. It also reaffirms the 2008 Authorization’s support for a healthy commercial space sector and includes provisions to foster its growth. The need for the legislation at this time is due to the expiration of the previous authorization and the fact that major changes to NASA’s programs have been proposed by the Administration and debated by Congress over the past year. Without a clear statement of congressional priorities and policies for NASA, the nation runs the risk of serious drift in our space program, with a resultant cost in time and resources and loss of critical capabilities.

Legislative History

H.R. 5781 was introduced by Representative Bart Gordon on July 20, 2010 and referred to the House Science and Technology Committee. The Committee met to consider the bill on July 22, 2010. The Committee agreed to report the bill to the House, as amended,
by voice vote. The Committee reported H.R. 5781, as amended, on July 28, 2010 (H. Rept. 111–576). No further legislative action was taken on H.R. 5781. However, the Senate companion to H.R. 5781 was subsequently enacted (see P.L. 111–267 in Chapter I for more information).

2.33—H.R. 5866, NUCLEAR ENERGY RESEARCH AND DEVELOPMENT ACT OF 2010

Background and Need for Legislation

Today in the United States there are 104 nuclear reactors producing approximately 20 percent of our nation’s electricity supply and 70 percent of our emissions-free energy. However, nuclear power as it exists today relies on a ‘once-through’ fuel cycle that produces high level radioactive waste from enriched uranium. In the United States, there exists a stockpile of approximately 63,000 metric tons of nuclear waste from reactors which generate roughly 2,000 more tons per year. Furthermore, the capital costs of nuclear plants have risen steeply and present a high hurdle to deployment of new reactors. Some have argued that without a fully developed strategy to deal with these challenges, nuclear power will be unable to compete with other fuel sources. Furthermore, in any carbon dioxide restrained regime, nuclear power will play a large role in energy production. To attain the 2030 reduction goals set in the American Clean Energy and Security Act, H.R. 2454, the Energy Information Administration estimated that at least 96 gigawatts of new nuclear capacity would be needed.

To address these challenges, the Nuclear Energy Research & Development Act of 2010 amends the Energy Policy Act of 2005 to modify and augment existing nuclear research and development programs at the Department of Energy. The primary goals of this bill are to mitigate the problems associated with nuclear waste and reduce the capital costs of nuclear power through a robust and integrated research, development, demonstration, and commercial application program.

The bill repeals the requirement that the Secretary of Energy implement the nuclear power 2010 program, the generation IV nuclear energy systems initiative, and the reactor production of hydrogen. The bill also directs the Secretary to implement research and development to advance fission power systems and technologies (reactor concepts) to sustain currently deployed systems, a small modular reactor program to promote research and development of small modular reactors, and research and development on fuel cycle options that improve uranium resource utilization, maximize energy generation, minimize nuclear waste creation, improve safety, and mitigate risk of proliferation in support of a national strategy for spent nuclear fuel and reactor concepts. Additionally, H.R. 5866 instructs the Secretary, in carrying out certain optional initiatives, to consider the final report on a long-term nuclear waste solution produced by the Blue Ribbon Commission on America’s Nuclear Future, directs the Secretary to conduct a program to support the integration of certain activities undertaken through R&D programs for reactor concepts and crosscutting nuclear energy concepts, and requires the Secretary to report to Congress on the
quantitative risks associated with the potential of a severe accident arising from the use of nuclear power and current technologies to mitigate the consequences of such an accident. The bill changes the location of the prototype Next Generation Nuclear reactor and associated Plant from the Idaho National Laboratory (IDL) to a construction site determined by the IDL-organized consortium of appropriate industrial partners through an open and transparent competitive selection process, directs the Comptroller General to submit to Congress a status update of the Next Generation Nuclear Plant program, and finally requires the Director of the National Institute of Standards and Technology (NIST) to establish a nuclear energy standards committee to facilitate the development or revision of technical standards for new and existing nuclear power plants and advanced nuclear technologies.

Legislative History

H.R. 5866 was introduced by Representative Bart Gordon on July 27, 2010 and referred to the Subcommittee on Energy and Environment of the House Science and Technology Committee. The Subcommittee met to consider the bill on July 28, 2010 and forwarded to the full committee by voice vote. The bill was reported, as amended, to the House by the Science and Technology Committee on November 18, 2010 (H. Rept. 111–658). The House considered the bill under suspension of the rules on November 30, 2010. The bill, as amended, was agreed to by voice vote.

H.R. 5866 was received in the Senate on December 1, 2010, read twice and referred to the Senate Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 5866.

2.34—H.R. 6160, RARE EARTHS AND CRITICAL MATERIALS REVITALIZATION ACT OF 2010

Background and Need for Legislation

The purpose of H.R. 6160 is to develop a rare earth materials program, to amend the National Materials and Minerals Policy, Research and Development Act of 1980, and for other purposes. Rare earth materials, or rare earths, are critical components of a broad range of technologies with applications in important industrial sectors such as defense, manufacturing, energy, transportation, optics, and electronics. Weapons guidance systems, petroleum refining catalysts, advanced vehicle batteries, wind turbine motors, jet engines, miniature disk drives and speakers, televisions and monitors, compact fluorescent light bulbs, and optical cable are just a few examples of technologies that cannot currently be made without rare earths. And, demand for rare earths for these and other technologies is only expected to increase. However, for the past decade, the United States and the rest of the world have been almost entirely dependent on China to supply rare earths.

The purpose of H.R. 6160 is to spur U.S. research, development and education in rare earths; to help facilitate investment in domestic production facilities across the entire rare earths supply chain; to promote international collaboration in the field; and to catalogue and disseminate research results and other information on rare earths. Many experts agree that actions are needed to ex-
pand the limited capabilities left behind from the Nation's former world leadership in these technologies, and to train the new scientists and engineers who will restore our ability to compete in the global market.

The U.S.'s mechanism for establishing a materials policy and monitoring the materials industry has also significantly diminished over the last three decades. The Congress passed the National Materials and Minerals Policy, Research and Development Act in 1980 to address concerns with bottlenecks in the production of tungsten and the platinum group metals. That law required both the Executive Office of the President and the Cabinet Departments to identify, track, and act to avert impacts on national security or the economy from a lack of materials. Four years later, dissatisfied with the progress of implementation, Congress passed the National Critical Materials Act, creating a National Critical Materials Council to serve as the President's primary advisers on materials issues and to oversee implementation of the 1980 Act. The mechanisms set up by the 1980 Act had since atrophied—the Committee on Materials formerly constituted within the Office of Science and Technology Policy no longer exist, the Bureau of Mines of the Department of the Interior has been disbanded, and there is no identifiable 'early warning' system as called for in the law. The National Critical Materials Council had little perceptible input on U.S. materials policy, and was ultimately terminated early in the Clinton administration.

H.R. 6160 amends provisions in the 1980 National Materials and Minerals Policy, Research and Development Act to remove obsolete provisions and require the Executive Office of the President and the Cabinet agencies to be attentive to the state of materials supply to meet the Nation's various needs. Particularly important is the design and maintenance of an 'early warning' system to prevent the U.S. from encountering emergency situations in regards to supplies of materials like rare earths. Finally, given the difficulties encountered by the National Critical Materials Council in overcoming bureaucratic resistance within the White House and the agencies, and the fact that its dissolution in 1993 has had very little effect on the Nation's national materials policy, H.R. 6160 repeals the underlying 1984 statute. Doing so returns accountability for materials issues to the Executive Office of the President and the Cabinet agencies.

Legislative History

H.R. 6160 was introduced on September 22, 2010 by Representative Kathleen Dahlkemper and referred to the House Science and Technology Committee. The Committee met to consider the bill on September 23, 2010 and agreed, by voice vote, to report the bill to the House. The bill, as amended was reported to the House on September 28, 2010 (H. Rept. 111–644).

The House considered the bill under suspension of the rules on September 28, 2010. The bill, as amended, was agreed to by a recorded vote of 325–98 (Roll Call No. 555).

H.R. 6160 was received in the Senate on September 29, 2010, read twice and referred to the Committee on Energy and Natural Resources. No further legislative action was taken on H.R. 6160.
Chapter III—Commemorative Resolutions Discharged by the Committee on Science and Technology and Passed by the House of Representatives

3.1—H. CON. RES. 167, SUPPORTING THE GOALS AND IDEALS OF NATIONAL AEROSPACE DAY, AND FOR OTHER PURPOSES

Background and Summary of Legislation

H. Con. Res. 167 supports the goals and ideals of National Aerospace Day, and recognizes the contributions of the aerospace industry to the history, economy, security, and educational system of the United States.

Legislative History

H. Con. Res. 167 was introduced by Representative Vernon Ehlers and solely referred to the Committee on Science and Technology on July 20, 2009. On September 9, 2009 the House debated the resolution under suspension of the rules and passed the resolution by voice vote. It was received in the Senate and referred to the Committee on Commerce, Science, and Transportation on September 10, 2009.

3.2—H. CON. RES. 292, SUPPORTING THE GOALS AND IDEALS OF NATIONAL AEROSPACE WEEK, AND FOR OTHER PURPOSES

Background and Summary of Legislation

H. Con. Res. 292 supports the goals and ideals of National Aerospace Week, and recognizes the contributions of the aerospace industry to the history, economy, security, and educational system of the United States.

Legislative History

H. Con. Res. 292 was introduced by Representative Vernon Ehlers and solely referred to the Committee on Science and Technology on June 30, 2010. On July 21, 2010 the House debated the resolution under suspension of the rules and passed the resolution, 413–0. It was received and agreed to in the Senate on September 13, 2010 without amendment and with a preamble by Unanimous Consent.
3.3—H. RES. 67, RECOGNIZING AND COMMENDING THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA), THE JET PROPULSION LABORATORY (JPL), AND CORNELL UNIVERSITY FOR THE SUCCESS OF THE MARS EXPLORATION ROVERS, SPIRIT AND OPPORTUNITY, ON THE 5TH ANNIVERSARY OF THE ROVERS' SUCCESSFUL LANDING

Background and Summary of Legislation

H. Res. 67 commends the engineers, scientists, and technicians of the Jet Propulsion Laboratory and Cornell University for their successful execution and continued operation of the Mars Exploration Rovers, Spirit and Opportunity, and recognizes the success and significant scientific contributions of NASA’s Mars Exploration Rovers.

Legislative History

H. Res. 67 was introduced by Representative David Dreier and solely referred to the Committee on Science and Technology January 15, 2009. On March 11, 2009 the House debated the resolution under suspension of the rules and passed the resolution, Y–421, N–0 (Roll Call No. 116).

3.4—H. RES. 117, SUPPORTING THE GOALS AND IDEALS OF NATIONAL ENGINEERS WEEK, AND FOR OTHER PURPOSES

Background and Summary of Legislation

H. Res. 117 supports the goals and ideals of National Engineers Week and its aims to increase understanding of and interest in engineering and technology careers and to promote literacy in math and science.

Legislative History

H. Res. 117 was introduced by Representative Dan Lipinski and solely referred to the Committee on Science and Technology on February 4, 2009. On February 12, 2009 the House agreed to the resolution under suspension of the rules, Y–422, N–0 (Roll Call No. 64).

3.5—H. RES. 224, SUPPORTING THE DESIGNATION OF PI DAY, AND FOR OTHER PURPOSES

Background and Summary of Legislation

The Greek letter (Pi) is the symbol for the ratio of the circumference of a circle to its diameter. The ratio Pi is an irrational number, which will continue indefinitely without repeating, and has been calculated to over one trillion digits. Pi has been studied throughout history and is central in mathematics as well as science and engineering. Pi can be approximated as 3.14, and thus March 14, 2009 was designated “National Pi Day”. H. Res. 224 supports the designation of “Pi Day” and its celebration around the world, and recognizes the continuing importance of National Science Foundation’s math and science education programs.
Legislative History

H. Res. 224 was introduced by Representative Bart Gordon and solely referred to the Committee on Science and Technology on March 9, 2009. On March 12, 2009 the House agreed to the resolution under suspension of the rules, Y–391, N–10 (Roll Call No. 124).

3.6—H. RES. 387, SUPPORTING THE GOALS AND IDEALS OF NATIONAL HURRICANE PREPAREDNESS WEEK

Background and Summary of Legislation

H. Res. 387 supports the goals and ideals of National Hurricane Preparedness Week, encourages the staff of the National Oceanic and Atmospheric Administration, especially the National Weather Service and the National Hurricane Center, and other appropriate Federal agencies, to continue their outstanding work of educating people in the United States about hurricane preparedness, and urges the people of the United States to recognize such a week as an opportunity to learn more about the work of the National Hurricane Center in forecasting hurricanes and educating citizens about the potential risks of the storms.

Legislative History

H. Res. 387 was introduced by Representative Mario Diaz-Balart and solely referred to the Committee on Science and Technology on April 30, 2009. On May 12, 2009 the House debated the resolution under suspension of the rules and passed the resolution by voice vote.

3.7—H. RES. 413, SUPPORTING THE GOALS AND IDEALS OF “IEEE ENGINEERING THE FUTURE” DAY ON MAY 13, 2009, AND FOR OTHER PURPOSES

Background and Summary of Legislation

The IEEE is the world’s largest technical professional society, with more than 375,000 members, including more than 210,000 members in the United States. The IEEE members are engineers, scientists, and other professionals whose technical interests and rooted in electrical and computer sciences, engineering, and related disciplines. The resolution recognizes the importance of engineering and technology to meeting our Nation’s most pressing challenges, congratulates IEEE on its 125th anniversary, and supports the goals and ideals of “IEEE Engineering the Future” Day.

Legislative History

H. Res. 413 was introduced by Representative Cliff Stearns and solely referred to the Committee on Science and Technology on May 6, 2009. On May 12, 2009 the House debated the resolution under suspension of the rules and passed the resolution, Y–409, N–0 (Roll Call No. 244).
3.8—H. RES. 447, RECOGNIZING THE REMARKABLE CONTRIBUTIONS OF THE AMERICAN COUNCIL OF ENGINEERING COMPANIES FOR ITS 100 YEARS OF SERVICE TO THE ENGINEERING INDUSTRY AND THE NATION

**Background and Summary of Legislation**

The American Council of Engineering Companies (ACEC) and its thousands of members firms celebrated the Council’s 100th anniversary in 2009. The ACEC is the oldest and largest business association of America’s engineering industry, representing more than 5,000 engineering firms that employ 500,000 professionals, engaged in a wide range of practices that propel our economy and ensure a high quality of life for all people in the United States. H. Res. 447 congratulates the American Council of Engineering Companies for its 100 years of service.

**Legislative History**

H. Res. 447 was introduced by Representative Heath Shuler and solely referred to the Committee on Science and Technology on May 14, 2009. On September 9, 2009 the House debated the resolution under suspension of the rules and passed the resolution, Y–420, N–0 (Roll Call No. 690).

3.9—H. RES. 492, SUPPORTING THE GOALS AND IDEALS OF HIGH-PERFORMANCE BUILDING WEEK

**Background and Summary of Legislation**

H. Res. 492 supports the goals and ideals of High-Performance Building Week and recognizes and reaffirms the Nation’s commitment to High-Performance Buildings by promoting awareness about their benefits and by promoting new education programs, supporting research, and expanding access to information. The resolution also recognizes the unique role that the Department of Energy plays through the Office of Energy Efficiency and Renewable Energy’s Building Technologies Program, which works closely with the building industry and manufacturers to conduct research and development on technologies and practices for building energy efficiency, and recognizes the important role that the National Institute of Standards and Technology plays in developing the measurement science needed to develop, test, integrate, and demonstrate the new building technologies. The resolution also encourages further research and development of high-performance building standards, research, and development.

**Legislative History**

H. Res. 492 was introduced by Representative Russ Carnahan and solely referred to the Committee on Science and Technology on June 2, 2009. On June 8, 2009 the House debated the resolution under suspension of the rules and passed the resolution by voice vote.
3.10—H. RES. 558, SUPPORTING THE INCREASED UNDERSTANDING OF, AND INTEREST IN, COMPUTER SCIENCE AND COMPUTING CAREERS AMONG THE PUBLIC AND IN SCHOOLS, AND TO ENSURE AN AMPLE AND DIVERSE FUTURE TECHNOLOGY WORKFORCE THROUGH THE DESIGNATION OF NATIONAL COMPUTER SCIENCE EDUCATION WEEK

Background and Summary of Legislation

H. Res. 558 supports the designation of National Computer Science Education Week and encourages schools, teachers, researchers, universities, and policymakers to identify mechanisms for teachers to receive cutting edge professional development to provide sustainable learning experiences in computer science at all educational levels and encourages students to be exposed to computer science concepts. The resolution also encourages opportunities, including through existing programs, for females and underrepresented minorities in computer science and supports research in computer science to address what would motivate increased participation in this field.

Legislative History

H. Res. 558 was introduced by Representative Vernon Ehlers and referred to the House Committee and Science and Technology, and in addition to the Committee on Education and Labor on June 18, 2009. On October 20, 2009 the House debated the resolution under suspension of the rules and passed the resolution, Y–405, N–0 (Roll Call No. 792).

3.11—H. RES. 607, CELEBRATING THE FORTIETH ANNIVERSARY OF THE APOLLO 11 MOON LANDING

Background and Summary of Legislation

H. Res. 607 celebrates the 40th anniversary of the Apollo 11 lunar landing, honors the brave crew of the Apollo 11 mission—Neil Armstrong, “Buzz” Aldrin, and Michael Collins, and commends all those individuals and organizations who contributed to such a historic achievement that continues to be an inspiration to the Nation and the world.

Legislative History

H. Res. 607 was introduced by Representative Ralph Hall and solely referred to the Committee on Science and Technology on July 7, 2009. On July 20, 2009 the House debated the resolution under suspension of the rules and passed the resolution, Y–390, N–0 (Roll Call No. 594).

3.12—H. RES. 631, CONGRATULATING CONTINENTAL AIRLINES ON ITS 75TH ANNIVERSARY

Background and Summary of Legislation

H. Res. 631 recognizes the 75th anniversary of operations by Continental Airlines and congratulates the employees of Conti-
nental Airlines for the numerous awards and accolades they have earned for the company over the years.

Legislative History

H. Res. 631 was introduced by Representative Gene Green on July 10, 2009. On July 22, 2009 the Committee on Science and Technology was discharged from public consideration of the resolution and that it was referred to the Committee on Energy and Commerce. On July 29, 2009 House debated the resolution under suspension of the rules and passed the resolution by voice vote.

3.13—H. RES. 793, SUPPORTING THE GOALS AND IDEALS OF NATIONAL CHEMISTRY WEEK

Background and Summary of Legislation

H. Res. 793 recognizes that the contributions of chemical scientists and engineers have created new jobs, boosted economic growth, and improved the Nation’s health and standard of living, supports the goals and ideals of National Chemistry Week, and encourages the people of the United States to observe National Chemistry Week with appropriate recognition, activities, and programs to demonstrate the importance of chemistry to everyday life.

Legislative History

H. Res. 793 was introduced by Representative Silvestre Reyes and referred solely to the Committee on Science and Technology on October 1, 2009. On October 20, 2009 House debated the resolution under suspension of the rules and passed the resolution by voice vote.

3.14—H. RES. 797, EXPRESSING THE SENSE OF CONGRESS WITH RESPECT TO RAISING AWARENESS AND ENHANCING THE STATE OF CYBER SECURITY IN THE UNITED STATES, AND SUPPORTING THE GOALS AND IDEALS OF THE SIXTH ANNUAL NATIONAL CYBER SECURITY AWARENESS MONTH

Background and Summary of Legislation

H. Res. 797 recognizes that cyber security is a critical part of the Nation’s overall homeland security. The resolution express that the House of Representatives supports the goals and ideals of National Cyber Security Awareness month and intends to work with Federal agencies, national organizations, businesses, and educational institutions to encourage the development and implementation of existing and future cyber security consensus standards, practices, and technologies in order to enhance the state of cyber security in the United States.

Legislative History

H. Res. 797 was introduced by Representative Yvette Clarke and referred solely to the Committee on Science and Technology on October 6, 2009. On October 22, 2009 the House agreed to the resolution under suspension of the rules, Y–415, N–0 (Roll Call No. 800).
3.15—H. RES. 935, HONORING JOHN E. WARNOCK, CHARLES M. GESCHKE, FORREST M. BIRD, ESTHER SANS TAKEUCHI, AND IBM CORPORATION FOR RECEIVING THE 2008 NATIONAL MEDAL OF TECHNOLOGY AND INNOVATION

Background and Summary of Legislation

H. Res. 935 honors John E. Warnock, Charles M. Geschke, Forrest M. Bird, Esther Sans Takeuchi, and IBM Corporation for receiving the 2008 National Medal of Technology and Innovation, which is the highest honor for technological achievement given by the President to the country's leading innovators.

Legislative History

H. Res. 935 was introduced by Representative Zoe Lofgren and referred solely to the Committee on Science and Technology on November 19, 2009. On March 9, 2010 the House agreed to the resolution under suspension of the rules, Y–402, N–0 (Roll Call No. 94).


Background and Summary of Legislation

H. Res. 1027 recognizes the 50th anniversary of the historic dive to the Challenger Deep in the Mariana Trench, the deepest point in the world’s oceans, on January 23, 1960, and its importance to marine research, ocean science, a better understanding of the planet, and the future of human exploration.

Legislative History

H. Res. 1027 was introduced by Representative Gregorio Sablan and referred solely to the Committee on Science and Technology on January 21, 2010. On March 19, 2010 the House agreed to the resolution under suspension of the rules, Y–398, N–2 (Roll Call No. 126).

3.17—H. RES. 1055, SUPPORTING THE DESIGNATION OF NATIONAL ROBOTICS WEEK AS AN ANNUAL EVENT

Background and Summary of Legislation

H. Res. 1055 supports the designation of National Robotics Week (NRW) as an annual event and encourages institutions of higher education and companies which utilize robotics technology to hold open houses during NRW to help explain the technology and its applications. The resolution also encourages science museums to organize events and demonstrations during NRW that help to educate and engage the public about robotics technology. The resolution also encourages additional educational activities related to robotics and affirms the growing importance of robotics technology.
**Legislative History**

H. Res. 1055 was introduced by Representative Michael Doyle and referred to the Committee on Science and Technology, and in addition to the Committee on Education and Labor, on February 2, 2010. On March 9, 2010 the House debated the resolution under suspension of the rules and passed the resolution by voice vote.

3.18—H. RES. 1069, CONGRATULATING WILLARD S. BOYLE AND GEORGE E. SMITH FOR BEING AWARDED THE NOBEL PRIZE IN PHYSICS

**Background and Summary of Legislation**

H. Res. 1069 congratulates Willard S. Boyle and George E. Smith for being awarded the Nobel Prize in physics and recognizes Bell Laboratories in Murray Hill, New Jersey, as a contributor to leadership in scientific research and innovation in the United States.

**Legislative History**

H. Res. 1069 was introduced by Representative Lance Leonard and referred solely to the Committee on Science and Technology on February 3, 2010. On March 9, 2010 the House agreed to the resolution under suspension of the rules, Y–402, N–0 (Roll Call No. 93).

3.19—H. RES. 1097, SUPPORTING THE GOALS AND IDEALS OF NATIONAL ENGINEERS WEEK, AND FOR OTHER PURPOSES

**Background and Summary of Legislation**

H. Res. 1097 supports the goals and ideals of National Engineers Week to increase the understanding of and interest in engineering careers and to promote technological literacy and engineering education, and resolves that the House of Representatives will continue to work with the engineering community to ensure that the creativity and contributions made by engineers can be expressed through research, development, standardization, and innovation.

**Legislative History**

H. Res. 1097 was introduced by Representative Daniel Lipinski and referred solely to the Committee on Science and Technology on February 23, 2010. On March 2, 2010 the House agreed to the resolution under suspension of the rules, Y–382, N–0 (Roll Call No. 77).

3.20—H. RES. 1133, RECOGNIZING THE EXTRAORDINARY NUMBER OF AFRICAN-AMERICANS WHO HAVE OVERCOME SIGNIFICANT OBSTACLES TO ENHANCE INNOVATION AND COMPETITIVENESS IN THE FIELD OF SCIENCE IN THE UNITED STATES

**Background and Summary of Legislation**

H. Res. 1133 recognizes the extraordinary number of African-Americans who have overcome significant obstacles to enhance innovation and competitiveness in the field of science in the United States, honors and recognizes all African-American innovators who have contributed to scientific education and research, directly and
indirectly, whose contributions have increased economic empowerment in the United States, and encourages the Administration to invest in programs that proven effective to lessen the achievement gap of African-Americans as well as other minority and disadvantaged groups in the sciences and ultimately strengthen competitiveness in the United States.

Legislative History

H. Res. 1133 was introduced by Representative Eddie Bernice Johnson and referred solely to the Committee on Science and Technology on March 2, 2010. On March 19, 2010 the House agreed to the resolution under suspension of the rules, Y–399, N–0 (Roll Call No. 145).

3.21—H. RES. 1213, RECOGNIZING THE NEED TO IMPROVE THE PARTICIPATION AND PERFORMANCE OF AMERICA’S STUDENTS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) FIELDS, SUPPORTING THE IDEALS OF NATIONAL LAB DAY, AND FOR OTHER PURPOSES

Background and Summary of Legislation

H. Res. 1213 supports the ideals of National Lab Day, calls upon the Office of Science and Technology Policy and the National Science Foundation to continue fostering partnerships such as those involved in National Lab Day, and encourages scientists, volunteers, and educators to participate in National Lab Day.

Legislative History

H. Res. 1213 was introduced by Representative Marcia Fudge and referred solely to the Committee on Science and Technology on March 24, 2010. On May 4, 2010 the House agreed to the resolution under suspension of the rules, Y–378, N–2 (Roll Call No. 244).


Background and Summary of Legislation

H. Res. 1231 celebrates the achievement of the National Aeronautics and Space Administration and the Television Infrared Observation Satellite (TIROS I) team who worked together to enable the successful launch and operation of TIROS I by the United States to establish applications of space systems and technology for the benefit of people worldwide. The resolution also recognizes the role of the United States space program in strengthening the scientific and engineering foundation that contributes to United States innovation and economic growth.
Legislative History

H. Res. 1231 was introduced by Representative Rush Holt and referred solely to the Committee on Science and Technology on March 24, 2010. On May 4, 2010 the House agreed to the resolution under suspension of the rules by voice vote.

3.23—H. RES. 1269, COMMEMORATING THE 400TH ANNIVERSARY OF THE FIRST USE OF THE TELESCOPE FOR ASTRONOMICAL OBSERVATION BY THE ITALIAN SCIENTIST GALILEO GALILEI

Background and Summary of Legislation

H. Res. 1269 commemorates the 400th anniversary of the first use of the telescope for astronomical observation by the Italian scientist Galileo Galilei for astronomical observation and marks this discovery as one of the major events impacting making, and expresses its gratitude for Galileo's expansion of the universe and mankind's understanding of his place in the cosmos.

Legislative History

H. Res. 1269 was introduced by Representative Patrick Tiberi and referred solely to the Committee on Science and Technology on April 15, 2010. On May 4, 2010 the House agreed to the resolution under suspension of the rules by voice vote.

3.24—H. RES. 1307, HONORING THE NATIONAL SCIENCE FOUNDATION FOR 60 YEARS OF SERVICE TO THE NATION

Background and Summary of Legislation

H. Res. 1307 recognizes the significance of the anniversary of the founding of the National Science Foundation, acknowledges that 60 years of National Science Foundation achievements and service to the United States have advanced our Nation's leadership in discovery, innovation, and learning in science, engineering, and mathematics, and reaffirms the House of Representatives commitment to support investments in basic research, education, and technological advancement through the National Science Foundation, one of the premier scientific organizations in the world.

Legislative History

H. Res. 1307 was introduced by Representative Bart Gordon and referred solely to the Committee on Science and Technology on April 29, 2010. On May 4, 2010 the House agreed to the resolution under suspension of the rules, Y–370, N–2 (Roll Call No. 243).

3.25—H. RES. 1310, RECOGNIZING THE 50TH ANNIVERSARY OF THE LASER

Background and Summary of Legislation

H. Res. 1310 recognizes the 50th anniversary of the laser and also recognizes the need for continued support of scientific research to maintain America's future competitiveness.
Legislative History

H. Res. 1310 was introduced by Representative Vernon Ehlers and referred solely to the Committee on Science and Technology on April 29, 2010. On May 4, 2010 the House agreed to the resolution under suspension of the rules by voice vote.

3.26—H. RES. 1388, SUPPORTING THE GOALS AND IDEALS OF NATIONAL HURRICANE PREPAREDNESS WEEK

Background and Summary of Legislation

H. Res. 1388 supports the goals and ideals National Hurricane Preparedness Week, encourages the staff of the National Oceanic and Atmospheric Administration to continue educating people in the United States about Hurricane preparedness, and urges the people of the United States to recognize such a week as an opportunity to learn more about the work of the National Hurricane Center in forecasting hurricanes and educating citizens about the potential risks of the storms.

Legislative History

H. Res. 1388 was introduced by Representative Mario Diaz-Balart and referred solely to the Committee on Science and Technology on May 24, 2010. On June 23, 2010 the House agreed to the resolution under suspension of the rules, Y–419, N–0 (Roll Call No. 384).

3.27—H. RES. 1407, SUPPORTING THE GOALS AND IDEALS OF HIGH-PERFORMANCE BUILDING WEEK

Background and Summary of Legislation

H. Res. 1407 supports the goals and ideals of High-Performance Building Week, recognizes and reaffirms the Nation’s commitment to high-performance buildings by promoting awareness about their benefits and by promoting new education programs, supporting research, and expanding access to information. The resolution also recognizes the unique and important roles that the Department of Energy and the National Institute of Standards and Technology play with respect to building technologies, and encourages further research and development of high performance building standards, research, and development.

Legislative History

H. Res. 1407 was introduced by Representative Judy Biggert and referred solely to the Committee on Science and Technology on May 27, 2010. On June 22, 2010 the House agreed to the resolution under suspension of the rules, Y–371, N–20 (Roll Call No. 378).
3.28—H. RES. 1421, RECOGNIZING THE 40TH ANNIVERSARY OF THE APOLLO 13 MISSION AND THE HEROIC ACTIONS OF BOTH THE CREW AND THOSE WORKING AT MISSION CONTROL IN HOUSTON, TEXAS, FOR BRINGING THE THREE ASTRONAUTS, FRED HAISE, JIM LOVELL, AND JACK SWIGERT, HOME TO EARTH SAFELY

Background and Summary of Legislation

H. Res. 1421 recognizes the 40th anniversary of the Apollo 13 mission and the bravery and heroism of the Apollo 13 mission, as well as the men and women in mission control. The resolution reaffirms the House of Representatives’ support of the National Aeronautics and Space Administration (NASA) and human space flight and recognizes the tremendous advances to science and technology in the United States that were spurred by the Apollo space program.

Legislative History

H. Res. 1421 was introduced by Representative Ted Poe and referred solely to the Committee on Science and Technology on May 28, 2010. On September 28, 2010 the House agreed to the resolution under suspension of the rules by voice vote.

3.29—H. RES. 1560, SUPPORTING THE INCREASED UNDERSTANDING OF, AND INTEREST IN, COMPUTER SCIENCE AND COMPUTING CAREERS AMONG THE PUBLIC AND IN SCHOOLS, AND TO ENSURE AN AMPLE AND DIVERSE FUTURE TECHNOLOGY WORKFORCE THROUGH THE DESIGNATION OF NATIONAL COMPUTER SCIENCE EDUCATION WEEK

Background and Summary of Legislation

This resolution supports the designation of National Computer Science Education Week and encourages schools, teachers, researchers, universities, and policymakers to identify mechanisms for teachers to receive cutting edge professional development to provide sustainable learning experiences in computer science at all education levels and encourage students to be exposed to computer science concepts. The resolution also encourages opportunities for females and underrepresented minorities in computer science and expresses support for research in computer science to advance what would motivate increased participation in the field.

Legislative History

H. Res. 1560 was introduced by Representative Vernon Ehlers and referred solely to the Committee on Science and Technology on July 27, 2010. On September 23, 2010 the House agreed to the resolution under suspension of the rules by voice vote.
3.30—H. RES. 1660, EXPRESSING SUPPORT FOR THE GOALS AND IDEALS OF THE INAUGURAL USA SCIENCE & ENGINEERING FESTIVAL IN WASHINGTON, D.C., AND FOR OTHER PURPOSES

Background and Summary of Legislation

H. Res. 1660 expresses support for the goals and ideals of the inaugural USA Science & Engineering Festival to promote science scholarship and an interest in scientific research and development as the cornerstones of innovation and competition in America. The resolution also congratulates all the individuals and organizations whose efforts will make the USA Science & Engineering festival possible, and encourages families and their children to participate in the activities and exhibits which will occur on the National Mall and across America as satellite events to the USA Science & Engineering festival.

Legislative History

H. Res. 1660 was introduced by Representative Brian Bilbray and referred solely to the Committee on Science and Technology on July 27, 2010. On September 28, 2010 the House agreed to the resolution under suspension of the rules by voice vote.

3.31—H. RES. 1714, CONGRATULATING THE ENGINEERS, SCIENTISTS, PSYCHOLOGISTS, AND STAFF OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) FOR HELPING TO SUCCESSFULLY RESCUE 33 TRAPPED CHILEAN MINERS FROM A COLLAPSED MINE NEAR COPIAPO, CHILE

Background and Summary of Legislation

H. Res. 1714 congratulates the engineers, scientists, psychologists, and staff of the National Aeronautics and Space Administration for helping to successfully rescue 33 trapped Chilean miners from a collapsed mine near Copiapo, Chile. The resolution also recognizes that the experience and knowledge of the National Aeronautics and Space Administration has acquired through space flight is beneficial to human life on Earth and was critical to the successful rescue of the Chilean miners.

Legislative History

H. Res. 1714 was introduced by Representative Eddie Bernice Johnson and referred solely to the Committee on Science and Technology on November 15, 2010. On November 16, 2010 the House agreed to the resolution under suspension of the rules by voice vote.
Chapter IV—Oversight, Investigations and Other Activities of the Committee on Science and Technology, Including Selected Subcommittee Legislative Activities

4.1—COMMITTEE ON SCIENCE AND TECHNOLOGY

4.1(a)—Electronic Waste: Investing in Research and Innovation to Reuse, Reduce, and Recycle

February 11, 2009

Hearing Volume No. 111–1

Background

On Wednesday, February 11, 2009, the Honorable Bart Gordon presiding, the Committee on Science and Technology held a hearing to discuss draft legislation entitled the Electronic Waste Research and Development Act of 2009. The purpose of the hearing was to discuss ways in which research and development can help address the challenge of managing the disposal of electronics products in the United States.

There were five witnesses: (1) Dr. Valerie Thomas, Anderson Interface Associate Professor at Georgia Institute of Technology; (2) Dr. Paul Anastas, Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment and Director of the Center for Green Chemistry and Green Engineering, Yale University; (3) Mr. Philip Bond, President of TechAmerica; (4) Mr. Jeff Omelchuck, Executive Director of the Green Electronic Council and Electronic Product Environmental Assessment Tool (EPEAT); and (5) Mr. Willie Cade, Chief Executive Officer of PC Rebuilders and Recyclers.

Summary

Chairman Gordon opened the hearing by noting that this was the Science and Technology Committee’s second hearing on the problem of electronic waste, or e-waste. He explained that Americans are discarding an increasing number of obsolete or broken electronic devices and that the majority of these items end up in landfills, rather than in the hands of recyclers. In addition to raising environmental concerns, this practice wastes the valuable materials, such as gold and copper, contained in electronics that could be recycled. Moreover, many discarded electronics are shipped overseas where low-wage workers, often children, disassemble them under unsafe conditions. Chairman Gordon then explained his draft legislation, which would direct the Environmental Protection Agency (EPA) to support research and development to make it easi-
er and less costly to recycle electronics and to make electronics themselves more environmentally friendly. Ranking Member Hall talked about the fast pace of innovation and improvement in electronic devices. He also mentioned programs and guidelines already in place at EPA and wondered how the draft legislation would complement these existing programs and guidelines.

Dr. Thomas explained that the electronic supply chain is not designed with recycling in mind. She suggested possible methods to make recycling easier, such as including an identifying tag on electronics (such as a bar code or a radio frequency identification tag) that would allow recyclers to identify the make and model of a product. She noted too that recycling rates are low because the existing collection programs are often difficult to use. She expanded upon the identification tag idea and suggested that recycling bins could be made to scan the identification tags and arrange for pick-up. Dr. Thomas noted that students are eager to work on environmental issues, and the draft legislation would help encourage students to work in the engineering field.

Dr. Anastas testified that e-waste is a serious problem, but that it is only one aspect of a much larger problem. He said that electronics production is both energy- and resource-intensive, and more work needs to be done to reduce the environmental impact of the entire life cycle of electronic products. He also explained that there are existing green chemistry and green engineering principles, some of which are already in use, which could be used to make electronic devices more environmentally friendly. However, he noted that the majority of products on the market do not make use of this design knowledge. Dr. Anastas named a number of research priorities that could help address the e-waste problem and make electronics more environmentally sustainable. For instance, he suggested that there are a number of ways to use old electronics in new applications, and noted that research could yield new design options (including new material joining options) to aid in disassembly. Finally, Dr. Anastas testified that research was imperative in addressing the e-waste challenge and in creating a more sustainable electronics industry.

Mr. Bond noted some environmental success in the electronics industry, including increased energy efficiency of technologies and reduction in the use of toxic substances with less harmful materials. He also praised the legislation proposed by Chairman Gordon, specifically for authorizing a study by the National Academy of Sciences on the disposal of e-waste, supporting research and development for environmentally friendly alternatives, and requiring universities to partner with industry to improve the training of undergraduate and graduate students.

Mr. Omelchuck noted that despite their extraordinary utility, electronic devices are among the most energy- and resource-intensive products in production today. To support his assertion, he cited the fact that approximately 80 percent of the environmental impact associated with desktop computers occurs during the material extraction and manufacturing phase, not from the use of the product. As a result, Mr. Omelchuck supported prolonging the useful life of each product. With regard to recycling, Mr. Omelchuck testified that the most important action is to stop irresponsible recycling,
where e-waste is exported to poorer countries and recycled by methods that are harmful to human health and the environment. Mr. Omelchuck noted that recycling the huge volume of legacy electronics was imperative in order to recover valuable materials and reduce their volume in landfills; however, he also cautioned that any e-waste management system must responsibly handle the toxic material in the electronic products. Mr. Omelchuck also advocated for a green purchasing system that would educate consumers about more environmentally friendly electronics, and therefore incentivize producers to design products that are more environmentally friendly. Finally, he suggested that the legislation under discussion include policy and economic research to evaluate funding and governance mechanisms for e-waste recycling.

Mr. Cade discussed the importance of refurbishment in addressing the e-waste challenge and testified that e-waste was actually a great opportunity to provide computers to people who might not otherwise be able to afford such equipment. He expressed his support for the legislation but suggested several changes. For instance, he suggested clearly defining “recycling” to include activates such as repair and refurbishment, and including a definition of “hazardous.” Throughout his testimony, Mr. Cade advocated for changing consumer attitudes about old electronic equipment to ensure reuse options are well considered.

### 4.1(b)—Impacts of U.S. Export Control Policies on Science and Technology Activities and Competitiveness

**February 25, 2009**

**Hearing Volume No. 111–4**

**Background**

On Wednesday, February 25, 2009, the Honorable Bart Gordon (D–TN) presiding, at 10:00 am in room 2318 Rayburn House Office Building, the Committee on Science and Technology held a hearing to review the impacts of current export control policies on U.S. science and technology activities and competitiveness and to examine the findings and recommendations of the National Academies study, *Beyond “Fortress America”: National Security Controls on Science and Technology in a Globalized World*. There were five witnesses: (1) Lieutenant General Brent Scowcroft, Co-chair of the National Academies Committee on Science, Security and Prosperity; (2) Mr. A. Thomas Young, Co-chair of the Strategic and International Studies Working Group on the Health of the U.S. Space Industrial Base and the Impact of Export Controls; (3) Dr. Claude R. Canizares, Vice President for Research and Associate Provost at Massachusetts Institute of Technology; (4) Maj. General Robert Dickman, Executive Director of the American Institute of Aeronautics and Astronautics.

**Summary**

Chairman Gordon raised concerns over the findings of several national reports regarding export controls. Chairman Gordon wanted to ensure that the nation’s export controls were working effec-
tively and without unintended adverse impacts. Ranking Member Ralph Hall (R-X) expressed that changes were needed on export controls, but in a manner that maintains American security. Rep. Dana Rohrabacher (R-CA) agreed with Ranking Member Hall that changes needed to be made, but he was adamant that any changes must provide for careful evaluation of future trade partners.

Lieutenant General Scowcroft provided testimony on the National Academies report, "Beyond 'Fortress America': National Security Controls on Science and Technology in a Globalized World." Lt. General Scowcroft pointed out that current export controls were outdated, and their regulations were more applicable to the Cold War era. Lt. General Scowcroft added that there was a better way to manage export controls and suggested that "we need to turn to an open mindset and export unless there is a reason not to." Mr. Young agreed with Lt. General Scowcroft's assessment of current export controls. He expanded in greater detail about their negative effects on the space commercialization industry, and specifically on the second and third tier space industrial base. Dr. Canizares discussed the diminishing effects that export controls levied on America's once dominant scientific leadership. Major General Dickman agreed with much of what had been said by the previous panelist, but added a sobering statement that described the real effects of export controls on the state of America's aerospace professionals: "In a very real sense, we the American taxpayer, are subsidizing the development of the technical workforce that is building the systems that are taking business away from U.S. companies and threatening our security."

4.1(c)—21st Century Water Planning: The Importance of a Coordinated Federal Approach

March 4, 2009

Hearing Volume No. 111–6

Background

On Wednesday, March 4, 2009, with the Honorable Bart Gordon (D-TN) presiding, the Committee on Science and Technology held a legislative hearing to discuss Federal coordination of water research and management policies and Committee draft of H.R. 1145: the National Water Research and Development Act. The third of three such hearings since May of 2008, the meeting aimed to address the supplies of clean water and climate change impacts on resource availability. Mr. Gordon introduced H.R. 1145 at the end of the 110th Congress and reintroduced it in February of 2009. The bill requires the establishment of a National Water Research and Development Initiative to improve the federal government's role in water research, development, demonstration, data collection and distribution and education and technology transfer activities to address changes in U.S. water use, quality, supply and demand. The bill also calls for the establishment of an interagency committee to ensure the implementation of the program.

There were five witnesses: (1) Dr. Henry Vaux, Jr., Professor Emeritus at the University of California, Berkeley and Associate Vice President Emeritus of the University of California System; (2)
Summary

In his opening statement, Chairman Gordon called attention to projected drought conditions across the U.S. and noted that while the American Recovery and Reinvestment Act had committed some funds to improving water infrastructure, H.R. 1145 is needed to fill critical gaps in water research and development coordination. Ranking Member Hall (R–TX) recalled some of the Committee’s past water initiatives and called for thorough collaboration with both its Senate counterparts and the various agencies involved in Federal water research.

During the witnesses’ testimony, Dr. Vaux lamented the trend of short-term-focused research initiatives and communication problems and provided four recommendations for achieving a more efficient use of funds and a comprehensive, streamlined research strategy. Dr. Gleick noted the progress of the Subcommittee on Water Availability and Quality (SWAQ) in coordinating twenty-plus agencies and establishing a national water agenda. He also commented on H.R. 1145 and provided feedback and suggestions for additions to the bill. Mr. Modzelewski lamented low funding levels for water R&D and coordination and made suggestions for the bill regarding infrastructure assessment, information technology standards, the National Science Foundation Centers, and a national water pilot testing facility. Ms. Stoner evinced the need for more careful attention to national water resources and called for consideration of climate change water interactions, advanced treatment technologies, pollution prevention, and water use monitoring in the U.S. Census. Ms. Furstoss argued for the coordination of private industry, academic, and federal agencies and emphasized the importance of the relationship between water and energy resources.

During the question and answer period, the Members and panelists discussed the efficacy of alternative and existing programs, strategies for effective interagency coordination, the possibility of a “smart water grid,” treatment of oil-contaminated water, promising technological applications, energy efficient, cost effective treatment systems, reducing consumer costs, recent developments in water efficiency, the role of the private sector, and effective conservation strategies. A major theme was that while water management is an intrinsically local issue, a national assessment of resources and best practices is critical to address future water shortages. The Members and witnesses agreed that the U.S. should commit to water management as a global issue through international aid, coordination, and information sharing.
On Tuesday, March 17, 2009, with the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to examine President Obama’s research and development priorities and activities at the Department of Energy (DOE) as well as opportunities for innovation at DOE under the Offices of Science, Energy Efficiency and Renewable Energy (EERE), Fossil Energy, Nuclear Energy, Electricity Delivery and Energy Reliability, and the Loan Guarantee program, and the Advanced Research Projects Agency–Energy (ARPA–E).

Dr. Steven Chu, U.S. Secretary of Energy, was the only witness. He was sworn in to office on January 21, 2009.

In his opening statement, Chairman Gordon noted the work of Dr. Chu and the Committee in developing the Advanced Research Projects Agency–Energy (ARPA–E) program and the specific challenges of domestic energy production, nuclear waste, and wise expenditure of American Recovery and Reinvestment Act (ARRA) funds. Ranking Member Ralph Hall (R–TX) lauded the President’s budget support for energy R&D and low carbon coal technologies, but called for increased dedication to oil and gas research, specifically the Ultra Deepwater and Unconventional Natural Gas and Other Petroleum Research program.

During his testimony, Secretary Chu discussed four main topics: how to best nurture science and scientists to solve our energy and climate change problems; the need to support transformational research projects; how DOE can foster research collaboration among universities, industry, and other nations; and the goal of demonstrating and commercializing next-generation, clean energy technologies. He expressed his commitment to facing the national security and greenhouse gas challenges of domestic energy policy, and thanked the Committee for its commitment to ARPA–E. Secretary Chu also called for increased and focused funding for the basic sciences and a stronger commitment to nurturing American intellectual capital in the sciences.

During the question and answer period, Secretary Chu discussed various DOE project timelines and the potential for a variety of burgeoning technologies at the Department. These issues included ARPA–E, carbon capture and sequestration, standards and interoperability with emissions trading and Smart Grid energy distribution programs, the DOE loan guarantee program, peak oil and international security concerns, evidence of climate change, vehicle electrification, oil dependency, and the state of nuclear plant development.

Several members brought up the energy issues that directly relate to their own districts, including the Ultra Deepwater program,
commercialization of solar power, corn-based ethanol, petroleum, carbon cap-and-trade issues, coal-to-liquid fuel production, and solar nanotechnology in paint products. Secretary Chu stressed the needs for international cooperation on research initiatives and standards development, developing a broad and varied “tool set” of alternative energy sources, increasing consumer product efficiencies, scientific cooperation between universities, national labs, and industry, and careful consideration of the economic issues that accompany new policies and programs.

Secretary Chu also expressed support specifically for algal biofuels, proliferation-resistant nuclear waste recycling, technology commercialization initiatives, harnessing the national interest to address the Nation’s energy issues at the individual level, battery development, and accounting for economic externalities in the environment, such as carbon.

4.1(e)—Networking and Information Technology Research and Development Act of 2009

April 1, 2009

Hearing Volume No. 111–17

Background

On Wednesday, April 1, 2009, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to receive testimony on the Networking and Information Technology Research and Development Act of 2009.

There were four witnesses: (1) Dr. Chris L. Greer, Director, National Coordination Office for Networking and Information Technology Research and Development; (2) Dr. Peter Lee, Professor and Head, Computer Science Department, Carnegie Mellon University; (3) Mr. Amit Yoran, Chairman and Chief Executive Officer, NetWitness Corporation; and (4) Dr. Deborah Estrin, Director, Center for Embedded Networked Sensing, University of California, Los Angeles

Summary

In his opening statement, Chairman Gordon described the goal of the legislative proposal. He indicated that the legislation responded to two categories of recommendations included in the assessment of the Networking and Information Technology Research and Development (NITRD) program conducted by the President’s Council of Advisors on Science and Technology (PCAST): the need to strengthen the program’s planning and coordinating functions and the balance of the research portfolio supported by the program. During the witness testimony, Dr. Greer stated that the PCAST recommendations and the interests of the Committee as expressed in the proposed legislation were helpful in improving the NITRD framework and that the goal of the National Coordination Office was the same as the Committee, to enable the NITRD program to serve the nation more effectively. Dr. Lee expressed his support for innovative, high-risk research and the provisions within the proposal that promoted large-scale, multidisciplinary research. He also indicated a need to increase the number of women and underrep-
resented minorities pursuing degrees in computer science. Mr. Yoran was unable to appear before the Committee, but his written testimony was included as part of the hearing record. Dr. Estrin added her support for the proposed legislation and described the importance of research in cyber-physical systems and the role of multidisciplinary research centers in advancing networking and information technology research.

During the question and answer period, Members and panelists focused on the security of our networked systems and the basic research needed to ensure their reliability and integrity, how to improve public-private partnerships in networking and information technology and the transfer of research results into the marketplace, and obstacles to and incentives for increasing the recruitment and retention of women and minorities in computer science.

4.1(f)—Monitoring, Measurement, and Verification of Greenhouse Gas Emissions II: The Role of Federal and Academic Research and Monitoring Programs

April 22, 2009

Hearing Volume No. 111–18

Background

On Wednesday, April 22nd, 2009, with the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to discuss existing and planned federal greenhouse gas (GHG) monitoring and verification systems and how these could support research, policy evaluation, projections, and compliance with potential climate agreements. This hearing was the second on this topic, following a Subcommittee meeting on February 24, 2009.

There were seven witnesses: (1) Dr. Sandy MacDonald, Director of the Earth Systems Research Laboratory for the National Oceanic and Atmospheric Administration (NOAA); (2) Dr. Beverly Law, Professor of Global Change Forest Science at Oregon State University and Science Chair of the AmeriFlux Network; (3) Dr. Richard Birdsey, Project Leader of the Climate, Fire, and Carbon Cycle Science for the USDA Forest Service and Chair of the Carbon Cycle Scientific Steering Group; (4) Dr. Michael Freilich, Director of the Earth Science Division for the National Aeronautics and Space Administration (NASA); (5) Ms. Dina Kruger, Director of the Climate Change Division in the Office of Atmospheric Programs at the Environmental Protection Agency (EPA); (6) Dr. Patrick D. Gallagher, Deputy Director of the National Institute of Standards and Technology (NIST); and (7) Dr. Albert Heber, Professor of Agricultural and Biological Engineering and Science Advisor of the National Air Emission Monitoring Study at Purdue University.

Summary

In his opening statement, Chairman Gordon discussed the current state of monitoring and requested ideas from the witnesses about how to design and implement a more reliable federally sponsored nation-wide monitoring system for greenhouse gases. Ranking Member Ralph Hall (R–TX) echoed the sentiment that more ro-
bust GHG monitoring and verification capabilities are critical to
environmental policy-making.

During the witnesses’ testimony, Dr. McDonald discussed how
further funding at NOAA could help to create a more robust and
complete emissions data inventory to provide a check on the suc-
cess of a mitigation effort. Dr. Law described the AmeriFlux Net-
work and the potential to quantify fluxes from natural and man-
aged systems in the context of GHG emissions. Dr. Birdsey ex-
plained how USDA’s inventory and monitoring programs could be
used to verify GHG mitigation activities and the successes of inter-
agency working groups such as the Carbon Cycle Interagency
Working Group and the Carbon Cycle Steering Group. Dr. Freilich
defined NASA’s role in providing global remote sensing products as
part of an interagency approach to establishing an all encompass-
ning GHG monitoring, measuring, and verification program. Ms.
Kruger described current EPA activities involving GHG moni-
toring, measuring, and verification and discussed the challenges in
acquiring reliable international emissions data especially from de-
veloping nations. Dr. Gallagher highlighted how NIST works with
other agencies to support climate monitoring and GHG measuring.
Dr. Heber explained how livestock operations, which account for
around 2.5% of United States GHG emissions, are developing base-
line data on which they can develop a more informed mitigation
scheme.

During the question and answer period, the Members and the
panelists discussed international climate modeling programs, re-
 mote sensing data and standards coordination, monitoring re-
sources, regulating carbon credit sources, establishing reliable
baselines, climate change skepticism, forest degradation, gaps in
the National Observation Network, GHG measuring, ocean acidifi-
cation, coordination data collection, the economics of establishing a
mitigation strategy, the carbon cycle, and America’s role in global
GHG emissions.

4.1(g)—An Overview of the Federal R&D Budget for
FY 2010

May 14, 2009

Hearing Volume No. 111–26

Background

On Thursday, May 14, 2009, the Honorable Bart Gordon (D–TN)
 presiding, the Committee on Science and Technology held a hear-
ing to examine the Administration’s proposed fiscal year (FY) 2010
funding for Federal research, development, demonstration, and
commercial application programs, in particular at agencies within
the jurisdiction of the Committee, and to explore how the 2007 Ameri-
a COMPETES Act programs within the jurisdiction of the
Committee were treated in the budget.

There was one witness: Dr. John Holdren, Assistant to the Presi-
dent for Science and Technology, Director of the Office of Science
and Technology Policy and Co-Chair of the President’s Council of
Advisors on Science and Technology.
Summary

In his opening statement, Chairman Gordon (D–TN) focused on supporting the Office of Science and Technology Policy, strengthening STEM education, and cooperation between the federal science agencies. Ranking Member Hall (R–TX) commended President Obama for continuing the commitment to double funding in key science agencies, expressed concern about the NASA program, and noted questions he had concerning the President’s goals for R&D investments in relation to GDP.

During his testimony, Dr. Holdren discussed the President's budget for research and development for the 2010 fiscal year. He spoke about the President's initiatives for science, technology and innovation, which included increasing R&D budgets as well as providing R&D tax credits and establishing guidelines for federally-funded stem cell research. The budget proposed $147.6 billion in federal funding for research and development across all agencies. Holdren’s testimony included summaries of the R&D and STEM education budgets for NSF, NIH, NASA, NIST, NOAA, DOE, EPA, and the U.S. Geological Survey, Department of Homeland Security, Department of Transportation, and the Department of Defense. He also discussed interagency initiatives, including the Networking and Information Technology R&D program, the National Nanotechnology Initiative, and the Climate Change Science Program. Holdren stated that the challenges facing the United States, including the economy, health, energy, the environment, and national and homeland security, are seen by President Obama as opportunities for science, technology and innovation, and said, “[the President] has been clear about his commitment to providing the resources, the incentives, and the ground rules that science, technology, and innovation will need in order to realize that potential.”

During the question and answer period, Members and panelists discussed the role of oceans in climate change and acidification, the role of social science in research, science diplomacy, international cooperation in space technology and other space endeavors, integrity in science, the percentage of GDP dedicated to R&D, the development of environmentally sustainable biofuels, the Blue Ribbon Task Force review of the Human Space Flight Program, using Energy Innovation Hubs as collaborations between existing institutions to promote energy innovation, ‘green’ buildings in relation to net zero energy and high performance buildings, energy storage with the Energy Frontier Research Centers, including Los Alamos National Laboratories, and improving funding for solar and other types of renewable energies.

4.1(h)—NASA’s Fiscal Year 2010 Budget Request

May 19, 2009

Hearing Volume No. 111–28

Background

On Tuesday, May 19, 2009, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing on the National Aeronautics and Space Administration’s
Chairman Gordon began by thanking Mr. Scolese for his service as Acting Administrator. He also commented on the recent NASA mission to service the Hubble Space Telescope. Chairman Gordon then went on to state the benefits from research and development from NASA as the reason why Congress increased funding for NASA. However, he expressed concern with the Administration's planned future budgets for NASA.

Ranking Member Hall (R-TX) first thanked Mr. Scolese for his service and stated his belief that NASA is one area of the federal budget where increases are justified. He stated his approval of the selection of Norm Augustine to lead the independent review panel for NASA. Mr. Hall said that he was concerned that the budget deleted out-year funding for the lunar landing and the heavy-lift Constellation launch vehicle.

Mr. Scolese began his testimony by noting the increase in NASA's budget in the regular appropriation along with allocated funds from the Recovery Act. He commented on the status of currently planned missions related to science, including the James Webb Space Telescope. Mr. Scolese also gave the current plans and budget for NASA's human space flight operations. He then discussed the independent review of the U.S. human space flight program and NASA's role in the review.

**4.1(i)—Advancing Technology for Nuclear Fuel Recycling: What Should Our Research, Development and Demonstration Strategy Be?**

June 17, 2009

**Hearing Volume No. 111–35**

**Background**

On Wednesday, June 17, 2009, the Honorable Bart Gordon (D-TN) presiding, the Committee on Science and Technology held a hearing to examine the various benefits, risks, expenses and time frames associated with recycling of spent nuclear fuel. The discussion was particularly pertinent due to a national commitment to and increasingly apparent need for U.S. energy independence and low-carbon means of production. The hearing purported to address the inevitable increase in nuclear fuel waste from planned growth in the U.S. nuclear energy program, including materials slated to retain their radioactive properties for thousands of years, and potential technological advancements for managing and treating such waste.

There were four witnesses: (1) Dr. Mark Peters, Deputy Associate Laboratory Director for Argonne National Laboratory, (2) Dr. Alan S. Hanson, Executive Vice President for Technology and Used Fuel Management at Areva, Inc., (3) Ms. Lisa Price, Senior Vice Presi-
dent for GE–Hitachi Nuclear Energy and Chief Executive Officer of Global Nuclear Fuel, LLC and (4) Dr. Charles D. Ferguson, Philip D. Reed Senior Fellow for Science and Technology for the Council on Foreign Relations.

Summary

In his opening statement, Chairman Gordon expressed his support for nuclear power as a means to American energy independence and noted the eventual need for materials reprocessing in a uranium-limited market. He asked the witnesses to address the question of whether to move forward with current reprocessing techniques or simply use existing waste storage systems in anticipation of more advanced technological solutions to come. Rep. Vernon Ehlers (R–MI), sitting in for Ranking Member Ralph Hall (R–TX), encouraged increased nuclear plant development and the Committee’s participation in nuclear waste issues, noting his opposition to White House plans to abandon the Yucca Mountain nuclear waste repository plans.

During the witness testimony, Dr. Peters provided some background information and identified several nuclear research and development needs, calling for increased federal funding to these ends. He argued for developing fully closed-cycle materials treatment process, noting that an open, once-through fuel cycle will not be a sustainable practice in the future of domestic nuclear power use. Dr. Hanson provided Areva’s recycling facility perspective, arguing that a robust recycling program would contribute to non-proliferation and large decreases in waste volume, and called for a near-term implementation of nuclear recycling in the U.S. Ms. Price detailed GE–Hitachi’s suggested approach to and support for nuclear fuel recycling, and provided four recommendations to the Committee for promoting timely R&D efforts. Dr. Ferguson detailed international nuclear reprocessing activities, arguing against closed-cycle reprocessing due to proliferation risk and current economic conditions.

The question and answer period focused on economic feasibility, development timelines and toxic and volatile material safety issues. The witnesses and Members discussed geologic repositories for nuclear materials, comparative weapons proliferation risk, the distribution and operational success of storage facilities in the U.S. and abroad, sodium cooled and water moderated nuclear reactors, the comparative short- and long-term economic costs of recycling, international cooperation, and high-temperature gas-cooled reactors. The panelists also discussed the quantities available of and market for pure uranium, the costs of locating and monitoring geologic repositories, plant licensing issues, mixed oxide (MOX) fuel, the proposed Yucca Mountain nuclear storage facility, public acceptance of nuclear power, anticipated waste management and alternative energy needs, subsidy and loan guarantee programs and the lifecycle carbon footprints of various means of energy production.

While there was no consensus on the appropriate timeframes and resource levels for next generation recycling technologies, the Members and witnesses agreed on the need for coordinating research and development activities with foreign nations, a comprehensive
nuclear roadmap weighing pace of technology development with increasing clean energy needs, a nonproliferation-conscious waste management policy, and a more comprehensive, diverse mix of alternatives to petroleum-based energy.

4.1(j)—Strengthening Regional Innovation: A Perspective From Northeast Texas

September 14, 2009

Hearing Volume No. 111–50

Background
On Monday, September 14, 2009, the Honorable Bart Gordon (D–TN) presiding, the Science and Technology Committee held a field hearing in McKinney, Texas to examine the importance of regional innovation centers to the U.S. economy and global competitiveness, and the roles of Federal, state, and local governments in supporting such centers.

There were six witnesses: (1) Dr. Carey Israel, President, Collin County Community College, (2) Dr. Dan Jones, President, Texas A&M University-Commerce, (3) Mr. Patrick Humm, President, Hie Electronics, (4) Dr. Martin Izzard, Vice President and Director, Digital Signal Processing Solutions R&D Center, Texas Instruments, (5) Mr. Bill Sproull, Vice-Chairman, Texas Emerging Technology Fund Advisory Committee, and (6) Mr. Tom Luce, Chief Executive Officer, National Math and Science Initiative.

Summary

In his opening statement, Chairman Gordon noted that regional innovation centers are a key component of our national competitiveness and that fostering local cultures of innovation creates jobs and boosts economic development. Representative Hall (R–TX) discussed the need to improve our long-term competitiveness along with the benefits derived from the innovation and economic growth taking place in Northeast Texas.

During the witness testimony, Dr. Israel shared his thoughts about science and technology in higher education, and discussed the benefits of local collaboration. Dr. Jones testified about initiatives that have been successfully implemented at Texas A&M University-Commerce that have strengthened the ties between education and industry. Mr. Humm talked about his company's role in technology manufacturing, the role such companies play in the economy, and the need for early stage capital funding for small high tech companies. Dr. Izzard focused on the research and education partnerships that Texas Instruments has formed within the North Texas innovation ecosystem. Mr. Sproull described the Emerging Technology Fund and detailed his view on the most important elements necessary to develop regional innovation capacity and grow the high-tech economy. Mr. Luce discussed the National Math and Science Initiative and is role in supporting a much-needed pipeline of highly qualified math and science teachers and students to keep the U.S. from losing ground to its foreign competitors.
During the question and answer period, members focused on ideas to encourage students interested in teaching to take advantage of programs in math and science education. They also discussed ways to streamline various bureaucratic issues currently impeding innovation.


September 15, 2009

Hearing Volume No. 111–51

Background

On Tuesday, September 15, 2009, the Honorable Bart Gordon presiding, the Committee on Science and Technology held a hearing to examine the summary report of the Review of U.S. Human Space Flight Plans Committee that was established by NASA under the direction of the Office of Science and Technology Policy, and to consider implications and related issues for NASA.

There were two panels of witnesses: on the first panel was (1) Mr. Norman R. Augustine, Chair of the Review of U.S. Human Space Flight Plans Committee; on the second panel there were (2) Vice-Admiral Joseph W. Dyer USN (Ret.), Chair of the Aerospace Safety Advisory Panel (ASAP) at NASA; and (3) Dr. Michael D. Griffin, Eminent Scholar and Professor of Mechanical and Aerospace Engineering at the University of Alabama in Huntsville.

Summary

In Chairman Gordon’s opening remarks, he stated his belief that NASA is not given the budget it needs to handle all of the projects it is instructed to undertake. Therefore, either the budget must be increased, or NASA’s responsibilities narrowed. Meanwhile, he also said that since so many billions of dollars have been invested in the Constellation program, there would need to be a very compelling reason to cancel the program. Ranking Member Hall (R–TX) began his opening remarks by reminding the Committee that the Columbia incident could be attributed to NASA’s inability to complete projects aimed at replacing the ailing Shuttle program. Rep. Hall then questioned why it was even necessary to look at new options, since previous congresses had already agreed on a program of action. Stated that safety, not lowest cost, should always take priority.

Mr. Augustine began by announcing that while many look to Mars as the ultimate destination of the Human Spaceflight Program, safety concerns made any trip to Mars in the near future improbable. Mr. Augustine included four alternatives to NASA’s baseline program in his written testimony. He told the Committee that the imbalance between tasks to be performed and funds available made it impossible to execute the current program of record. Moreover, the panel determined that NASA’s budget would need to linearly increase to $3 billion above the FY 2010 budget guidance by FY 2014 and then increase by an estimated annual inflation rate of 2.4 percent to conduct any viable human space flight and explo-
ration program. Mr. Augustine summed up his remarks by telling the Committee that the great risk involved in human space flight made it irresponsible to cut corners on funding.

The Committee then granted Mr. Augustine’s request to be joined by another member of his panel, Dr. Edward F. Crawley, to help answer any questions the Committee might have.

Vice-Admiral Dyer opened the second panel by focusing on safety and safety-related opportunities and issues. While he observed that canceling existing programs and starting over would only lengthen the period of time in which the U.S. would be incapable of transporting humans into space, he reiterated that ASAP did not support extending the Space Shuttle program. Vice-Admiral Dyer added to the previous critiques of commercial solutions to the gap, saying that the Commercial Orbital Transportation Services Project (COTS) was not subject to the same human-ratings standards as NASA itself. He observed that NASA would do well to develop a better process for integrating manned and unmanned systems. Vice-Admiral Dyer also urged the Committee to undertake a broader and more transparent discussion of the great risks inherent in human spaceflight.

In his opening statement, Dr. Griffin focused on the recent history of NASA’s budget. He said that the budget cuts of 1994 had obviously not worked out. Dr. Griffin pointed out that while $3 billion sounds like a lot of money, if NASA funding had been kept at the same level from 1993 to the present, there would be even more money in the NASA budget than that requested by the Augustine committee. He concluded that in order to follow through on the directives laid out in the 2005 and 2008 NASA Authorization acts, Congress must increase NASA’s budget.

4.1(l)—Geoengineering: Assessing the Implications of Large-Scale Climate Intervention

November 5, 2009

Hearing Volume No. 111–62

Background

On Thursday, November 5, 2009, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to introduce the concept of geoengineering, or the deliberate modification of climate systems beyond traditional mitigation strategies, and explore some of its associated scientific, regulatory, engineering, governance, and ethical challenges.

There were five witnesses: (1) Professor John Shepherd, Professional Research Fellow in Earth System Science at the University of Southampton and Chair of the Royal Society Geoengineering working group that produced the report Geoengineering the Climate: Science, Governance and Uncertainty; (2) Dr. Ken Caldeira, Professor of Environmental Science in the Department of Global Ecology at the Carnegie Institution of Washington and a co-author of the Royal Society Report; (3) Mr. Lee Lane, Co-Director of the American Enterprise Institute (AEI) Geoengineering Project, (4) Dr. Alan Robock, professor at the Department of Environmental Sciences in the School of Environmental and Biological Sciences at
Rutgers University, and (5) Dr. Jim Fleming, Professor and Director of the Science, Technology and Society Department at Colby College and author of *Fixing the Sky: The Checkered History of Weather and Climate Control*.

**Summary**

In his opening statement, Chairman Gordon introduced some key challenges with geoengineering and described Committee plans for future research and international collaboration. He warned that geoengineering is not a substitute for a comprehensive greenhouse gas mitigation strategy and would require years of applied research before deployment.

During the witness testimony, Dr. Caldeira profiled the two major categories of geoengineering, solar radiation management (SRM) and carbon dioxide removal (CDR) and called for a multi-agency research program into both types. Professor Shepherd described the goals, considerations and conclusions of the Royal Society report and recommended a multidisciplinary research initiative on geoengineering, including widespread public engagement at a global scale. Mr. Lane argued for the economic viability of and environmental and political need for stratospheric injections, a solar radiation management strategy. Dr. Robock identified some of the major risks and uncertainties of geoengineering and noted the problems of international disagreement on goals, the interruption of large scale solar radiation management, and the impossibility of small-scale tests of geoengineering, but argued for a comprehensive research program to help inform future climate policy decisions. Dr. Fleming provided a historical context of weather modification and its concurrent governmental issues, arguing that any geoengineering initiative must be interdisciplinary, international, and intergenerational.

During the question and answer period, the Members and witnesses discussed the eruption of Mt. Pinatubo in 1991 as a model for solar radiation management, the potential efficacy of greenhouse gas mitigation goals, the need for continued mitigation strategies and behavior change, the methane output of livestock, the environmental impacts of stratospheric injections, and the challenges of international collaboration. They also reviewed climate modeling and simulation tools, the power of American scientific innovation, skeptical arguments against anthropogenic climate change, the possibilities of distributed solar panels, the potential roles of several federal agencies in geoengineering research and application, and how to prioritize the different suggested strategies. The panelists and Members agreed that the U.S. should avoid applying of geoengineering before performing extensive applied research and establishing governance mechanisms, and that a research program should be multi-disciplinary and internationally coordinated.
4.1(m)—Decisions on the Future Direction and Funding for NASA: What Will They Mean for the U.S. Aerospace Workforce and Industrial Base?

December 10, 2009

Hearing Volume No. 111–69

Background

On Thursday, December 10, 2009, the Honorable Bart Gordon presiding, the Committee on Science and Technology held a hearing on the future direction and funding for NASA, and what that future held for the U.S. aerospace workforce and industrial base.

There were four witnesses: (1) Mr. David Thompson, President of the American Institute of Aeronautics and Astronautics (AIAA); (2) Ms. Marion C. Blakey, President and CEO of the Aerospace Industries Association (AIA); (3) Mr. A. Thomas Young, retired Executive Vice-President of the Lockheed Martin Corporation; and (4) Dr. Richard Aubrecht, Vice-Chairman and Vice-President of Strategy and Technology at Moog Inc.

Summary

Chairman Gordon yielded to Rep. Giffords (D–AZ), Chairwoman of the Subcommittee on Space and Aeronautics, to preside over the hearing. Rep. Giffords began by noting that contracts with the commercial sector already accounted for 80% of NASA’s budget. She said that support for NASA was therefore also support for the commercial space sector, and the high-paying, high-quality jobs it created. Chairman Gordon added that if disbanded, the NASA workforce would be very difficult to reassemble. Ranking Member Hall (R–TX) waived his right to make opening remarks, and instead Mr. Olson (R–TX) made a brief statement urging the Committee to prevent the aerospace industry from the kind of decimation endured by the automotive industry. He was also concerned about the long-term effect eliminating aerospace jobs would have on encouraging students to enter the STEM fields.

Mr. Thompson spoke on behalf of the AIAA, representing more than 36,000 aerospace scientists and engineers. He explained that there were insufficient new aerospace engineers and scientists to take the places of the increasing number of retirees. He claimed that the aerospace sector would therefore experience a dramatic decline in its technical workforce over the next decade. Mr. Thompson also pointed out that although U.S. human spaceflight programs employed less than 20% of the country’s aerospace workers, they had an enormous influence on motivating young people to enter the field of aerospace science and engineering in the first place. He concluded from this that cuts to U.S. human spaceflight programs would stress an already weak sector of the economy. Cutbacks to human spaceflight programs could also weaken the industrial base of the entire space and national security sector.

Ms. Blakey began by saying that aerospace talent and facilities lost to other industries would be irretrievable. Without the inspirational power of NASA programs, it would become even more difficult to attract students to the study of STEM fields. A commit-
ment to a robust human spaceflight program could have an enormous influence in attracting and retaining new workers. Ms. Blakey added that the constantly fluctuating budgets that have been a staple of the last decade adversely affected the production and maintenance of a skilled workforce. Moreover, such interruptions or cancellations were catastrophic to small firms, whose expertise would then be lost forever.

Mr. Young remarked that without significant experience and continuity of participation, intellectual capability was not enough by itself to maintain a successful spaceflight program. He thought that the attempt to move faster and go cheaper was punching holes in the safety net necessary to prevent human errors from warping into catastrophes. Mr. Young insisted that the kind of uncompromising discipline necessary for safe spaceflight required a permanent investment.

Dr. Aubrecht, an engineer for the precision motion control company Moog, spoke of his company’s work on fly-by-wire flight control technology. He told the Committee that NASA programs gave Moog the opportunity to develop the core technologies and core knowledge that it eventually transferred to commercial applications. Dr. Aubrecht explained it was common for NASA contracts that accounted for only a small percentage of a company’s sales to form a majority of its research and development. He concluded that consistent funding of the Constellation program was necessary to carry on this system.

4.1(n)—America COMPETES: Big Picture Perspectives on the Need for Innovation, Investments in R&D, and a Commitment to STEM Education

January 20, 2010

Hearing Volume No. 111–70

Background

On Wednesday, January 20, 2010, the Honorable Bart Gordon presiding, the Committee on Science and Technology held a hearing to examine the role that science and technology play in promoting economic security and maintaining U.S. competitiveness and to understand the perspective of the business community on the reauthorization of the America COMPETES Act.

There were four witnesses: (1) Mr. John Castellani, President, Business Roundtable; (2) Mr. Tom Donohue, President, U.S. Chamber of Commerce; (3) Governor John Engler, President, National Association of Manufacturers; and (4) Ms. Deborah Wince-Smith, President and CEO, Council on Competitiveness.

Summary

Chairman Gordon opened the hearing by discussing the America COMPETES Act, which was enacted in 2007. Chairman Gordon explained that, prior to the passage of the America COMPETES Act, the National Academies of Science published a groundbreaking report entitled “Rising Above the Gathering Storm,” which included a comprehensive set of recommendations to create jobs and further U.S. competitiveness. The recommendations from this report were
heavily relied upon in the development of the COMPETES Act. Among other things, the COMPETES Act established grant programs to improve science, technology, engineering and math (STEM) education and the Advanced Research Project Agency for Energy (ARPA–E), which has already awarded its first round of grants. Chairman Gordon noted that the COMPETES Act is scheduled to expire this year and expressed his hope that witnesses would be able to provide guidance in its reauthorization.

Mr. Castellani expressed the Business Roundtable’s support for the reauthorization of COMPETES. He explained that investments in research and education provide the tools for accelerated technological innovation, which drives productivity and growth. Innovation leads to new products and processes, and even whole new industries. While the U.S. is currently struggling with high unemployment and budget deficits, China is pouring billions into research and education, which will provide more competition for the American workforce in the near future. Mr. Castellani claimed that the state of America’s public education system is one of the Nation’s greatest weaknesses. An independent commission the Business Roundtable convened found that the gap between worker skills and the needs of employers is widening. Strengthening science, technology, engineering and math (STEM) education at all levels needs focused attention now and in the future.

Mr. Donohue pointed out that high school dropout rates are approaching 30 percent, and nearly 50 percent for minorities. American 15-year-olds rank 21st out of 30 in science literacy among their peers from developed countries and 25th out of 30 in math literacy. He therefore strongly supports the reauthorization of COMPETES. COMPETES improves the number and quality of STEM teachers, increases support and access for STEM students, attracts underrepresented groups to STEM courses, supports basic research, and establishes programs that will help create new forms of energy and commercialize innovations.

Governor Engler also supported reauthorizing the COMPETES Act. He touched on three main topics: ARPA–E, STEM education, and the Manufacturing Extension Partnership (MEP). ARPA–E supports research in energy and also attempts to usher in new generations of clean, efficient sources of energy. These are areas that industry by itself is not likely to undertake because of technical and financial uncertainty. ARPA–E’s first round of funding, in May 2009, produced an outpouring of applications. Governor Engler emphasized the importance of STEM education to providing the necessary foundation for a technical workforce. However, he also explained that the government’s emphasis on STEM skills often begins and ends with the academic side of science and math. For manufacturers, the application of STEM skills is critical. Programs outlined in the COMPETES Act take a step towards better integration of the skills needed by employers. Governor Engler highlighted MEP as another key program. In previous years, MEP contributed to more than 57,000 jobs, helped deliver $1.4 billion in cost savings, and played a role in generating more than $10.5 billion in sales.

Ms. Wince-Smith agreed with the other witnesses in supporting the reauthorization of COMPETES. She said that strength in STEM education for all Americans, irrespective of their future ca-
reers, should be included in future authorizations, as should steady and predictable increases in federal research funding, greater coordination across federal agencies in innovation policy, and new models for public-private partnerships, such as ARPA–E. The importance of these provisions has increased in the recent years, further compounded by the global economic crisis and the highest unemployment level in America since the Great Depression. Global competition has accelerated, nearing that of the U.S. Ms. Wince-Smith stated the United States needs a vibrant and diversified high-tech manufacturing sector.


January 27, 2010

Hearing Volume No. 111–72

Background

On Wednesday, January 27th, with the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to review the activities of the Advanced Research Projects Agency–Energy (ARPA–E) approximately one year after its initial funding, and to explore upcoming goals and potential improvements to be made in the America COMPETES Reauthorization Act of 2010. ARPA–E was proposed in the National Academies’ report Rising Above the Gathering Storm, authorized in the 2007 America COMPETES Act, and funded in the American Recovery and Reinvestment Act of 2009.

There were five witnesses: (1) Dr. Arun Majumdar, Director of the Advanced Research Projects Agency–Energy (ARPA–E); (2) Dr. Chuck Vest, President of the National Academy of Engineering; (3) Dr. Anthony Atti, President and CEO of Phononic Devices, Inc.; (4) Mr. John Denniston, a Partner at the venture capital firm Kleiner, Perkins Caufield & Byers; and (5) Dr. John Pierce, Vice President of Dupont Applied Sciences–Biotechnology.

Summary

In his opening statement, Chairman Gordon provided background information on ARPA–E and lauded the Agency staff for their efforts in standing-up the program. Ranking Member Hall (R–TX) expressed several concerns about the structure and mission about ARPA–E but committed to work with Chairman Gordon and seek to ensure the program’s success.

During the witness testimony, Dr. Majumdar described the first two program Funding Opportunity Announcements and suggested using government purchasing power to create a demand pull for American innovations. He also expressed confidence in ARPA–E staff and grant recipients, as well as the United States’ ability to innovate and develop new energy solutions. Dr. Vest explained the history that led the Rising Above the Gathering Storm committee to suggest the concept of ARPA–E and argued that Congress must enable ARPA–E to stick to its mission of nimble, goal-oriented re-
search, distinguish itself from other energy research and development initiatives, and to maintain strong ties to industry and entrepreneurial communities. Dr. Atti relayed his experience with Phononic Devices, whose research was once supported by DARPA, and identified the risks, range of challenges, and key strategies for early-stage technological developments. Mr. Denniston offered the perspective of the venture capital community, illustrated the risks of a Chinese competitive edge on clean energy technologies, and urged the Members to extend additional resources to ARPA–E. Dr. Pierce explained the role that ARPA–E and other funding mechanisms can play to help larger industry firms support new longer-term research that firms might otherwise abandon because of long lead-times to market, and provided recommendations on how the Agency can remain effective in the future.

During the question and answer period, the Members and panelists discussed how ARPA–E can most effectively support energy innovation and encourage economic well-being in the United States. They explored how to keep manufacturing jobs and intellectual property in the U.S., strategies for scaling up fledgling technologies, prioritization of goals for ARPA–E, and how intellectual property relates to commercialization. Other topics included STEM education and federal renewable electricity standards, how to leverage government funding to attract private investment, helping small businesses achieve market breakthroughs, the structure of the ARPA–E grant system and its criteria for funding project proposals, the global solar power market, and national security. The witnesses agreed that the United States should continue to enable high-risk, high-reward research initiatives and that American technological competitiveness with foreign nations will be paramount to the country’s economic success in the coming decades.

4.1(p)—The Administration’s FY 2011 Research and Development Budget Proposal

February 24, 2010

Hearing Volume No. 111–78

Background

On Wednesday, February 24, 2010, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to examine the Administration’s proposed fiscal year (FY) 2011 funding for Federal research, development, demonstration, and commercial application programs, in particular at agencies within the jurisdiction of the Committee. In addition, in preparation for a reauthorization of the 2007 America COMPETES Act, the Committee examined the status of programs authorized in the 2007 Act, as reflected in the Administration’s budget request.

There was one witness: Dr. John Holdren, Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy (OSTP).

Summary

In his opening statement, Chairman Gordon spoke about the increases in funding for research and development in the President’s
proposed budget in spite of the difficult economy. He noted the importance of investing in innovation, discovery, and transformative technology as a means to secure future economic growth. Ranking Member Hall, in his opening statement, expressed concern for some of the Administration’s science policy decisions, including the plan to modify NASA’s human space flight program and the elimination of Yucca Mountain as a storage site for nuclear waste.

During the witness testimony, Dr. Holdren spoke about the Obama Administration’s commitment to invigorate American economic growth by making targeted investments in science, technology and innovation, thus creating more products and services, new businesses and industries, and increased American competitiveness and high-quality sustainable jobs. He noted that the President’s R&D budget proposal, which included a $61.6 billion investment in civilian R&D, not including facilities and equipment, is the very core of America’s future strength. He also expressed the Administration’s understanding of the importance of science, technology, and innovation in addressing some of the country’s most compelling present and future challenges. Holdren stated that the President recognizes the importance of the National Science Foundation, the Department of Energy’s Office of Science, and the National Institute of Standards and Technology Laboratories, and is still committed to doubling their budgets.

Dr. Holdren testified specifically about R&D budgets at the Department of Energy, including the Advanced Research Projects Agency for Energy (ARPA–E), the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), as well as the tri-agency program, the National Polar-orbiting Operational Environmental Satellite System (NPOESS). Holdren also mentioned funding for the National Institutes of Health, the Next Generation Air Transportation System (“NextGen”), the Defense Advanced Research Projects Agency (DARPA), research under the National Nanotechnology Initiative, and the multi-agency U.S. Global Change Research Program. Finally, Holdren emphasized the Administration’s commitment to increase participation and performance of American students in science, technology, engineering and mathematics (STEM) education in order to be ranked among the top students globally. The 2011 budget would invest $3.7 billion in STEM education programs, including $1 billion for improving math and science education among K–12 students.

During the question and answer period, the Members and panelists discussed innovation hubs and clusters, the proposed cancellation of NASA’s Constellation program, the NPOESS satellite program, STEM education in the NSF budget, R&D funding as a percentage of GDP, global climate change and ocean acidification, increased collaboration between national laboratories and the private sector to drive innovation, Yucca mountain as a storage site for nuclear waste and materials, the President’s commitment to doubling the R&D budget in a tight economic situation, the backlog of infrastructure requirements at the DOE, agency relationships with OSTP and the America COMPETES Act, NASA’s lack of ambition in only pursuing Low Earth Orbit, the use of natural gas in pedes-
trian vehicles, the politicization of global warming, and concerns about the “Race to the Top” initiative.

4.1(q)—NASA's Fiscal Year 2011 Budget Request and Issues

February 25, 2010

Hearing Volume No. 111–80

Background

On Thursday, February 25, 2010 at 10:00 am, the Committee on Science and Technology held a hearing on the National Aeronautics and Space Administration's (NASA) Fiscal Year (FY) 2011 Budget Request and Issues.

There was one witness: Charles F. Bolden, Administrator of the National Aeronautics and Space Administration (NASA).

Summary

Chairman Gordon opened the hearing by commending the five-year funding increase granted to NASA in the President’s new budget, as well as other positive features, such as the increases for Earth sciences and aeronautics, the investments in long-term technology development and the extension of the lifetime of the International Space Station (ISS). However, he also noted that other features of the new request had not gained much support, namely, the radical new approach to human spaceflight and exploration. The Chairman expressed his hope that the Administrator would address the budget's reliance on commercial crew transportation systems.

Mr. Bolden began his testimony by explaining that NASA's future exploration effort would focus not just on our Moon, but also on near-Earth asteroids, Lagrange points, Mars and its moons—with Mars as the ultimate destination. By investing in the right technology, NASA would be able to map out a more realistic path to that final goal. Mr. Bolden said that the budget's renewed focus on R&D would produce new opportunities for U.S. industry and spur the creation of new businesses. He highlighted the sustainability and affordability of the new approach. Mr. Bolden said that the lessons NASA had learned in the course of the Constellation program would inform the Agency’s future flagship technology development and demonstration program. He further noted the presence of investments in heavy-lift R&D, climate change observations, aeronautics and education initiatives.

4.1(r)—The Department of Energy Fiscal Year 2011 Research and Development Budget Proposal

March 3, 2010

Hearing Volume No. 111–81

Background

On Wednesday, March 3, 2010, with the Honorable Bart Gordon (D–TN) presiding, the Science and Technology Committee held a
hearing to discuss the Administration’s Fiscal Year 2011 research and development budget request for the Department of Energy (DOE).

Dr. Steven Chu, Secretary of Energy, was the only witness.

Summary

In his opening statement, Chairman Gordon thanked Dr. Chu for his leadership at DOE and discussed a recent Energy Innovation Summit held by the Advanced Research Projects Agency–Energy (ARPA–E). Ranking Member Hall (R–TX) dispensed with his opening remarks in the interest of time.

During the witness testimony, Dr. Chu highlighted several key elements of the Fiscal Year 2011 budget proposal’s research and development programs. He explained that the DOE’s Energy Innovation Hubs, ARPA–E, and Energy Frontier Research Centers can drive energy technology innovation and job creation, and help the United States maintain technological leadership in the 21st century.

During the question and answer period, the Members and panelists focused on the following: job creation in the United States; leveraging the Department of Defense to help create domestic markets; the termination of fossil fuel research and development; energy efficiency; licensing of solar and wind projects; nuclear research and development programs; the decline of oil reserves; problems in the innovation chain; nonproliferation; hub-model laboratories; high-performance computing facilities; spent nuclear fuel recycling; carbon capture and sequestration and the role of coal in a clean energy economy; appliance efficiency standards; and wind transmission capacity.

4.1(s)—Reform in K–12 STEM Education

March 4, 2010

Hearing Volume No. 111–82

Background

On Thursday, March 4, 2010, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to examine the role of the Federal agencies in supporting improvements in K–12 STEM education and promoting STEM literacy. The hearing was held in preparation for the reauthorization of the America COMPETES Act.

There were four witnesses: (1) Dr. Jim Simons, Founder and Chairman of Math for America; (2) Ms. Ellen Futter, President of the American Museum of Natural History; (3) Dr. Gordon Gee, President of Ohio State University; and (4) Dr. Jeffrey Wadsworth, President and CEO of Batelle Memorial Institute.

Summary

In his opening statement, Chairman Gordon focused on the America COMPETES Act and the need for key stakeholders, in-
cluding those represented on the witness panel, to be involved in K–12 STEM education. Ranking Member Hall (R–TX) spoke about the need to invest in research, development, and STEM education and scale up successful programs while still maintaining fiscal restraint and reducing the budget deficit.

During the witness testimony, Dr. Simons discussed the need to import workers and export jobs because of the shortages in the STEM workforce, as well as his ideas about reforming the teaching structure to improve STEM education in secondary schools. Ms. Futter discussed the powerful role that informal science education can play in developing STEM interest and literacy, and the need to expand those opportunities in COMPETES. Dr. Gee argued for a longer term COMPETES investment and spoke about the need for better collaboration between institutions of higher education and K–12 schools. Dr. Wadsworth argued for a transition to more project-based learning in the STEM field.

During the question and answer period, the Members and panelists discussed the National Science Foundation’s Noyce program, specialized STEM school models, the discrepancy between the United State's K–12 education system and more successful institutions of higher education, difficulties in hiring qualified teachers and administrators, the need to expand partnerships between educational institutions, and tying STEM to liberal arts studies, social justice problems and other common issues.

4.1(t)—Fiscal Year 2011 Research and Development Budget Proposals at the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA)

March 10, 2010

Hearing Volume No. 111–84

Background

On Wednesday, March 10, 2010, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to discuss the Administration’s Fiscal Year 2011 budget requests for EPA and NOAA.

There were two witnesses: (1) Dr. Paul Anastas, Assistant Administrator of the Office of Research and Development at the U.S. Environmental Protection Agency; and (2) Dr. Jane Lubchenco, Administrator of the National Oceanic and Atmospheric Administration.

Summary

In his opening statement, Chairman Gordon reiterated his support for EPA and NOAA and discussed his approval of certain aspects of their proposed budgets as well as his concerns about other specific areas and sections. Ranking Member Hall (R–TX) expressed concerns about both proposed budgets, including the dissolution of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) and the creation of a NOAA Climate Service.
During his testimony, Dr. Anastas discussed the direction and specifics of the EPA Fiscal Year 2011 budget request. During the question and answer period, Dr. Anastas answered questions regarding e-waste, social behavioral studies, and ocean acidification. Several members discussed the 2009 greenhouse gas endangerment finding and the scientific criteria used to make that finding.

During her testimony, Dr. Lubchenco described the priorities in NOAA’s Fiscal Year 2011 budget proposal, including refocusing many of NOAA’s climate research and outreach activities into a comprehensive Climate Service and prioritizing commercial and recreational fishing issues. During the question and answer period, Dr. Lubchenco responded to Member questions about greenhouse gas monitoring; ocean acidification; funding for the Aquarius Lab; harmful algal blooms and hypoxia; Asian Carp issues; a NOAA Organic Act; privatization of the NOAA fleet; environmental remediation of the Chesapeake Bay; the restructuring of NPOESS; fish catch shares; and NOAA’s position on recreational fishing. Dr. Lubchenco was pressed to explain how NOAA was reorganizing to form the Climate Service without notifying the Committee. She reassured the Members that NOAA’s overall policies, responsibilities and budget allocations would remain largely the same, and that NOAA would continue to work closely with its authorizing Committees.


March 17, 2010

Hearing Volume No. 111–87

Background

On Wednesday, March 17, 2010, the Honorable Bart Gordon presiding, the Committee on Science and Technology held a hearing to receive testimony on the need for U.S. manufacturers to adopt innovative technologies and processes in order to remain globally competitive, and to determine the appropriate role for the Federal government in supporting efforts by U.S. manufacturers to innovate.

There were five witnesses: 1) Dr. Susan Smyth, Director of Manufacturing, GM R&D, and Chief Scientist for Manufacturing, General Motors Company; 2) Dr. Len Sauers, Vice President, Global Sustainability, Procter & Gamble; 3) Mr. Debosh Chakrabarti, President and Chief Operating Officer, PMC Group Inc.; 4) Dr. Mark Tuominen, Director, National Nanomanufacturing Network; and 5) Mr. Wayne Crews, Vice President for Policy and Director of Technology Studies, Competitive Enterprise Institute.

Summary

Chairman Gordon opened the hearing by emphasizing the importance of the manufacturing sector in the U.S. economy and describing the role of innovation and workforce development in addressing the challenges of global competition. Ranking Member Hall expressed concern that increasing government regulation has forced
companies to shift resources away from manufacturing research and development.

Dr. Smyth's testimony described General Motors' collaborations in advanced manufacturing with the National Institute of Standards and Technology (NIST), the Department of Energy (DOE), and the National Aeronautics and Space Administration, and voiced support for increased cross-agency collaboration and public-private partnerships, as well as more funding for manufacturing research and development at NIST and DOE. Dr. Sauers discussed how Proctor and Gamble's investments in research and development have increased the environmental sustainability of their products and operations. He also advocated for greater government focus on renewable energy research and science, technology, engineering, and mathematics (STEM) education; reauthorization of the America COMPETES Act; increased government/industry collaboration through the National laboratories; and the development of sound and predictable policies, legislation and regulation to foster a competitive manufacturing environment. Mr. Chakrabarti proposed a three-pronged approach to addressing the increasing global competition in chemical manufacturing: government support of sustainable chemical manufacturing, transforming existing facilities to produce renewable chemicals, and using technology to improve productivity. Dr. Tuominen called for an increasing government commitment to innovation in manufacturing and emphasized the importance of Federal investments and public-private partnerships in nanomanufacturing research. Mr. Crews voiced general skepticism of government regulation and Federal funding of research and development.

The witnesses generally supported greater interagency cooperation and public-private partnerships to link research with actual manufacturing and bring about manufacturing innovation. Several of the witnesses stressed the need to include small, medium, and large manufacturers in the planning and execution of innovation policy. Mr. Chakrabarti said that continuous feedback between industry and government agencies was necessary to avoid losing U.S.-developed innovations to overseas manufacturers. Dr. Smyth stressed the need for greater government involvement in applying new technology. A number of the witnesses described the burden of excessive or unstable government regulation. The panel supported the use of prizes and awards, such as the Malcolm Baldrige award and DARPA Grand Challenges, to stimulate innovation in manufacturing and confirmed the importance of Federal policies that support education and build infrastructure.

4.1(v)—Geoengineering III: Domestic and International Research Governance

March 18, 2010

Hearing Volume No. 111–88

Background

On Thursday, March 18, 2010, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to explore the domestic and international governance needs
to initiate and guide a geoengineering research program and which U.S. agencies and institutions have the capacity or authorities to conduct geoengineering research. The hearing was the third and final in the series, following meetings on November 5, 2009 and February 4, 2010.

There were five witnesses. The first panel consisted of (1) Member of Parliament Phil Willis, Chair of the Science and Technology Committee in the United Kingdom House of Commons and Representative of Harrogate and Knaresborough. The second panel included (1) Dr. Frank Rusco, Director of Natural Resources and Environment at the Government Accountability Office (GAO); (2) Dr. Granger Morgan, Professor and Head of the Department of Engineering and Public Policy and Lord Chair Professor in Engineering at Carnegie Mellon University; (3) Dr. Jane Long, Deputy Principal Associate Director at Large and Fellow for the Center for Global Strategic Research at Lawrence Livermore National Lab (LLNL); and (4) Dr. Scott Barrett, Lenfest Professor of Natural Resource Economics at the School of International and Public Affairs and the Earth Institute at Columbia University.

Summary

In his opening statement, Chairman Gordon welcomed the honored guest, Chairman Willis, and emphasized that the scientific evidence of anthropogenic climate change is overwhelming and that a more robust scientific and political understanding of geoengineering’s potential is needed. Ranking Member Ralph Hall (R–TX) expressed reservations about geoengineering and dispensed with further remarks in the interest of time and courtesy to Chairman Willis.

After an introduction from Chairman Gordon, Chairman Willis testified via live video on the background of the bi-national geoengineering inquiry and introduced the U.K. Committee’s official report on the subject, The Regulation of Geoengineering. He delineated some of the report’s key findings and recommendations, including key governing principles, and stressed that while geoengineering would be an extremely complex and challenging venture, it would be irresponsible not to initiate appropriate regulation and research. During the first question and answer period, Chairman Willis and the Members discussed the potential for a comprehensive international database on geoengineering information and activities, the future of geoengineering research in the U.K., and additional opportunities for bilateral cooperation. They also explored the role of public opinion and the media and how the U.K. inquiry process engaged both the public and scientific experts.

During the second panel, Dr. Rusco summarized key findings of the Government Accountability Office’s ongoing inquiry on geoengineering, describing some of the existing, relevant research activities in federal agencies and international treaties. He also provided support for why some geoengineering strategies should be regulated promptly. Dr. Morgan described geoengineering research at Carnegie Mellon University and argued for a cautious, risk-aware research program on solar radiation management. He also argued that the National Science Foundation should lead initial research efforts, that transparency should be a priority, and that the
potential environmental impacts of specific research initiatives should inform the international agreements and laws intended to regulate them. Dr. Long discussed the key questions and principles for governance and risk management, and urged that identified benefits of any program must clearly outweigh the risks. Dr. Barrett assessed the different scenarios in which geoengineering might be used, warning that there would certainly be winner and loser nations, and recommended seven key governance rules.

During the second discussion period, the Members and witnesses explored initial regulatory structures and debated the appropriate research and management roles for the U.S. Department of Energy, the National Science Foundation, the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, and other federal agencies. They also discussed the national security and geopolitical impacts of climate change itself and the need for adaptive management. All panelists and witnesses agreed that unilateral geoengineering could be very dangerous and should be avoided. There was also a consensus that geoengineering is a highly interdisciplinary, diverse topic and that any research initiative may require several federal and university partners.

4.1(w)—Charting the Course for American Nuclear Technology: Evaluating the Department of Energy’s Nuclear Energy Research and Development Roadmap

May 19, 2010

Hearing Volume No. 111–94

Background

On Wednesday, May 19, 2010, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to discuss the administration’s research and development options to advance clean and affordable nuclear energy technology. There were two panels consisting of six witnesses: (1) Dr. Warren P. Miller, Assistant Secretary of Nuclear Energy at the Department of Energy; (2) Mr. Christopher Mowry, President and CEO of Babcock & Wilcox Nuclear Energy, Inc.; (3) Dr. Charles Ferguson, President of the Federation of American Scientists; (4) Dr. Mark Peters, Deputy Director for Programs at Argonne National Laboratory; (5) Mr. Gary M. Krellenstein, Managing Director for Tax Exempt Capital Markets at JP Morgan Chase & Co.; and (6) Dr. Thomas L. Sanders, President of the American Nuclear Society.

Summary

In his opening statement, Chairman Gordon reiterated his support for nuclear energy but pointed out that waste management issues must be resolved for full scale deployment of next generation reactors. Representative Dana Rohrabacher (R–CA) expressed frustration with the recent decision to shut down Yucca Mountain as a possible repository for spent fuel but did thank the Chairman for his shared support of nuclear power.

During the first panel, Dr. Miller briefly described DOE’s roadmap for nuclear energy research and development and highlighted
two programs, the small modular reactor program and the modified open cycle program, that work to realize the administration’s objectives for the future of nuclear energy.

During the question and answer period, the Members and Dr. Miller focused on cost-sharing limitations; global competition; Yucca Mountain; supply of uranium; reprocessing of spent fuel; alternatives to LWR’s and types of SMR’s; uranium legacy mine cleanup efforts; proliferation risks associated with full-recycle; modified open cycle; expediting licensure; and the economics of nuclear power.

In the second panel, Mr. Mowry described the Babcock & Wilcox mPower reactor and complained that the roadmap’s cost-sharing program doesn’t go far enough to mitigate the significant capital costs in deploying a SMR. Dr. Ferguson pointed out how far behind the United States is in global SMR demonstration but suggested that we could still set the precedent in waste concerns, safety, reliability, and cost. He also asked how we should respond to waste concerns in client countries and called for an establishment of market incentives for waste disposal. Dr. Peters recommended closed fuel cycles as an ultimate goal but urged current funds to go to deployment of advanced systems. Representing Argonne, Dr. Peters supported the roadmap and encouraged the rapid installment of domestic demonstration activities. Mr. Krellenstein spoke to the financial-related issues associated with SMR’s and the potential for the roadmap to improve investment fundamentals for nuclear power in the US. Dr. Sanders called the roadmap a good start but would rather see more focus on deployment of readily available technologies. In his view, the US could and should become a major supplier to the global marketplace.

During the question and answer period, the Members and panelists focused on regaining leadership in the global marketplace; the slow permitting process; alternatives to loan guarantees and other methods of speeding up deployment; competitiveness of SMR’s versus fossil fuels; existing SMR technology; brownfield deployment; and DOE budget issues. Everyone agreed that deploying the readily available technologies, finding a waste management solution, and minimizing the risk of proliferation should be the DOE’s top priority.

4.1(x)—Review of the Proposed National Aeronautics and Space Administration Human Spaceflight Plan

May 26, 2010

Hearing Volume No. 111–96

Background

On May 26, 2010, the Honorable Bart Gordon presiding, the Committee on Science and Technology held a hearing on the proposed National Aeronautics and Space Administration (NASA) Human Spaceflight Plan. The purpose of the hearing was to continue the examination of the proposed NASA human spaceflight plan and to review issues related to the budget, cost, schedule and potential impacts of the plan.
The hearing examined: 1) the Administration’s proposed goals, strategies and plans for NASA’s human spaceflight and exploration programs, including the revisions announced by the president on April 15, 2010; 2) the assumptions, basis, feasibility and sustainability of those plans within the FY 2011 budget plan and outyear funding plan; 3) the key challenges and risks involved in implementing the proposed change of course for NASA; and 4) what outstanding questions and issues needed to be addressed, and what information was needed for Congress’ consideration of the proposed future direction for NASA’s human spaceflight and exploration programs.

There were four witnesses: (1) Mr. Charles Bolden, Administrator of NASA; (2) Mr. Neil Armstrong, Commander of Apollo 11; (3) Capt. Eugene Cernan, Commander of Apollo 17; (4) Mr. Thomas Young, Lockheed Martin.

Summary

Chairman Gordon (D–TN) opened the hearing by reminding Administrator Bolden of the Administration’s responsibility to demonstrate the feasibility of the new budget for human spaceflight. Ranking Member Hall (R–TX) said that before investing in commercial crew, the government should wait to observe the progress of commercial cargo services.

Administrator Bolden testified that the new budget set the agency on a sustainable path, progressing step by step from a mission to an asteroid by 2025 to a mission to Mars orbit by the 2030s. He said that NASA would build on its work on the Orion to develop a Crew Rescue Vehicle which could in the future be leveraged into spacecraft for deep-space missions. Meanwhile in the present, the construction of a rescue vehicle would preserve critical high-tech-industry jobs.

Chairman Gordon then called in the second panel. In his testimony, Mr. Armstrong enumerated the reasons to return to the Moon. He said that the lunar vicinity was an exceptional location to learn about traveling to more distant and more difficult destinations. He also cited the many scientific challenges to address regarding Helium–3, platinum group metals and how to survive on the lunar surface. Mr. Armstrong added that his priorities for the human space program were maintaining American leadership, access to low-Earth orbit and capability to explore.

Captain Cernan referred to a letter he wrote along with Mr. Armstrong and Mr. Lovell in which they expressed their concerns regarding the new plan. He said it would take the private sector as long as ten years to access low-Earth orbit safely and cost-effectively. Relying solely on the commercial sector could thus lead to abandoning American involvement in the ISS entirely. Constellation, on the other hand, had already been debated and vetted by Congress and federal agencies from OMB to DoD. He said that exploration was necessary to drive technology innovation, not the reverse.

Mr. Young concluded that NASA’s success stemmed from its meld of institutional continuity and expertise with industry capability. He thought that the Administration’s proposal abandoned this model, leaving NASA with a purely advisory role. If imple-
mented, this would be similar to the failed acquisition reform the Air Force undertook in the 1990s. Mr. Young also said that the proposed FY 2011 budget could not support both an adequate ISS program and exploration beyond low-Earth orbit.

4.1(y)—Averting the Storm: How Investments in Science Will Secure the Competitiveness and Economic Future of the U.S.

September 29, 2010

Hearing Volume No. 111–111

Background

On Wednesday, September 29, 2010, the Honorable Bart Gordon (D–TN) presiding, the Committee on Science and Technology held a hearing to receive testimony from distinguished members of the 2005 “Rising Above the Gathering Storm” Committee who participated in a recent review of the 2005 report and produced an updated report entitled, Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5. Witnesses commented on the findings included in the new report, and offered recommendations to the Committee and to Congress on how to maintain U.S. competitiveness and economic security for the long-term.

There were four witnesses: (1) Mr. Norman R. Augustine, retired Chairman and CEO of the Lockheed Martin Corporation and former Undersecretary of the Army; (2) Dr. Craig Barrett, retired Chairman and CEO of Intel; (3) Mr. Charles Holliday, Jr., Chairman of the Board of Bank of America and retired Chairman of the Board and CEO of DuPonte; and (4) Dr. C.D. (Dan) Mote, Jr., President Emeritus of the University of Maryland and Glenn L. Martin Institute Professor of Engineering.

Summary

In his opening statement, Chairman Gordon focused on the United States’ continuing decline in competitiveness since the original Rising Above the Gathering Storm report was released, and emphasized the importance of reauthorizing the America COMPETES Act during the 111th Congress. Ranking Member Hall (R–TX) noted that the challenges laid out in the original report are even more difficult to confront under the current economic circumstances. He suggested that government investments need to be made more efficiently and that the private sector, teachers, and families need to increase their efforts in addition to the ongoing investments of the Federal government.

During the witness testimony, Mr. Augustine lauded the success of the 2007 America COMPETES Act but noted that most of the funding for COMPETES-authorized programs came from Recovery Act appropriations, and that increasing financial constraints on the federal budget and university budgets continues to threaten American competitiveness. Dr. Barrett spoke about the three factors that make up the international ‘competitiveness quotient’: the education level of the workforce; the investment in new ideas; and the competitive environment, including government regulations, taxes, and intellectual property protection. He suggested that the United
States is not doing very well in any of these areas. Barrett also expressed his full support for COMPETES, but indicated that the private sector needs to get behind these other issues as well.

Mr. Holliday focused on the importance of developing low-cost, clean energy, and listed the conditions under which such a development would be realistic, including continuity in the field of research, $11 billion in funding, geographic clusters of technology developers and business partners, and government-funded or assisted prototype facilities. Lastly, Dr. Mote noted that while the America COMPETES Act and other U.S. initiatives have had some success, other countries are investing much more aggressively in their global competitiveness and the United States is farther behind now than in 2005 when the original report was released. He argued that science, technology, and innovation must become a true priority in order to secure future American prosperity and national security.

During the question and answer period, Members and panelists discussed why the government should leverage private sector research investments, the importance of clean and low-cost energy to the rest of the American economy, how to keep new technology and manufacturing in the United States, how and whether to issue visas in order to keep foreign-born, American-educated STEM students in the U.S., co-location of research and manufacturing, connecting K–12 education with workforce development, the research and development tax credit, industry incentives for keeping jobs in the United States, the corporate tax rate, the symbolic importance of passing the America COMPETES Act, how to educate leaders and Members of Congress about the importance of investing in research, education and innovation, how to incentivize the energy sector to invest in petroleum alternatives, free-trade agreements and protection of American intellectual property, whether to prioritize funding for basic research or applied research and commercialization, and the importance of having certified teachers for K–12 math and science education.

4.1(z)—Options and Opportunities for Onsite Renewable Energy Integration

November 15, 2010

Hearing Volume No. 111–113

Background

On Monday, November 15, 2010, with the Honorable Russ Carnahan (D–MO) presiding, the Committee on Science and Technology held a hearing to discuss integrating renewable energy systems in the built environment. The hearing was held in the Dirksen Federal Courthouse in Chicago, IL with Mr. Carnahan serving as Chairman and Ms. Biggert (R–IL) as Ranking Member.

There were five witnesses: (1) Mr. Joseph Ostafi, Regional Leader for the Science and Technology Division and Group Vice President of HOK; (2) Mr. Michael Lopez, Director of Facility Operations for Bolingbrook High School; (3) Mr. Daniel Cheifetz, Chief Executive Officer of Indie Energy Systems Company; (4) Dr. Jeffrey P. Chamberlain, Department Head for Electrochemical Energy Stor-
age and Energy Storage Major Initiative Leader of the Chemical Sciences and Engineering Division at Argonne National Laboratory; and (5) Ms. Martha G. VanGeem, Principal Engineer and Group Manager of Building Science and Sustainability of CTL Group.

Summary

In his opening statement, Mr. Carnahan discussed the role of buildings in the Nation’s environmental footprint, activities of the bipartisan High-Performance Building Congressional Caucus, and the opportunities that lie ahead for integration of renewable energy systems in the built environment. Ms. Biggert presented some examples of high-performance buildings in and around Chicago, discussed the importance of building efficiency programs, and asked the witnesses to elaborate on the challenges of deploying some technologies.

During the witness testimony, Mr. Ostafi discussed the role of architects, engineers, and planners in developing innovations and opportunities for on-site renewable energy integration and highlighted that political and financial obstacles to implementing these programs are still major barriers. Mr. Lopez talked about the benefits of integrating renewable energy in schools and other environments. Mr. Cheifetz described his work to develop onsite geothermal energy systems and related monitoring technologies. Dr. Chamberlain described a variety of energy storage technologies and their role in both small and large scale systems. Ms. VanGeem discussed how renewable-ready requirements a compromise between cost-effectiveness and the goal of renewable energy in all buildings.

During the question and answer period, the Members and panelists focused on the impact renewable energy integration would have on the economy and job creation; initial investment versus payback periods; training a new workforce; the “valley of death” between technology demonstration and commercialization; the benefits of new building requirements and standards; educating users and business leadership; strategies and challenges with “greening” school districts; saving energy by targeting human behavior; curtain wall systems; double-duty renewable energy systems; energy storage needs and opportunities; and potential next steps for legislation.
February 24, 2009

Hearing Volume No. 111–3

Background

On Tuesday, February 24th, 2009, with the Honorable Brian Baird (D–WA) presiding, the Committee on Science and Technology, Subcommittee on Energy and Environment held a hearing to discuss the federal role in supporting researching and development of monitoring technologies, emissions factors, models, and other tools necessary to support reliable accounting of establishing a baseline for greenhouse gas emissions and changes in emissions relative to the baseline under a regulatory program for greenhouse gases.

There were four witnesses: (1) Mr. John Stephenson, Director of Natural Resources and Environment at the Government Accountability Office (GAO); (2) Ms. Jill Gravender, Vice President for Policy at The Climate Registry; (3) Ms. Leslie Wong, Director of Greenhouse Gas Programs for Waste Management, Inc.; (4) Mr. Rob Ellis, Greenhouse Gas Program Manager for Advanced Waste Management Systems, Inc.

Summary

In his opening statement, Chairman Baird emphasized the imminent risks of global overheating and ocean acidification and called for tools to allow regulated entities to track their emissions in order to support an effective GHG mitigation strategy. Ranking Member Inglis (R–SC) discussed his proposal for a revenue-neutral carbon tax, an alternative to a cap-and-trade system for GHG management. He also urged that a GHG mitigation system be equitable to American manufacturers, in part by applying equitable tax structures to both domestic and imported goods.

During the witness testimony, Mr. Stephenson noted that the data needs depend on the point at which a regulatory program regulates emissions and that existing cap-and-trade programs have highlighted the criticality of quality emissions data. He also argued that all GHGs, not just CO₂, must be accommodated in a meaningful emissions inventory, and that while there are several useful GHG registries in operation, none are at the scope or complexity needed for a nationwide program. Ms. Gravender provided background on The Climate Registry, a voluntary program which requires annual third-party verification. She explained that while it
is possible for most organizations to accurately account for, report, and verify emissions today, organizational challenges and scientific uncertainties must be addressed. Ms. Wong described Waste Management’s GHG programs, noting its contributions to decreasing landfill emission. She also argued for a phased approach to federal reporting requirements and sufficient time for the joint Waste Management/EPA testing of landfill gas emissions under a variety of conditions before requiring site-specific reporting of landfill GHG emissions. Mr. Ellis warned that with GHG reporting, the consequences of error and opportunity for fraud are high without third party verification, which Advanced Waste Management Systems provides. He described the verification process and emphasized the need for due attention to verifiers’ potential conflicts of interest.

During the question and answer period, the Members and witnesses discussed upstream versus downstream analysis and monitoring, international coordination on GHG monitoring, carbon tax structures, how to coordinate federal agencies and States, monitoring standards development, methane and water vapor, the various existing carbon monitoring and change registries. They also reviewed life cycle product pricing, preventing carbon market manipulation and fraud, voluntary versus mandatory standards and reporting, public information, and international carbon control agreements. Not all Members and panelists agreed, however, on the scientific evidence of climate change, leading some Members to criticize the large amounts of government money being spent on monitoring programs.

4.2(b)—FutureGen and the Department of Energy’s Advanced Coal Programs

March 11, 2009

Hearing Volume No. 111–9

Background

On Wednesday, March 11, 2009, the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment met to discuss the FutureGen program and strategies for accelerating research, development and demonstration of advanced technologies to help reduce greenhouse gas emissions from coal-fired power plants. FutureGen, a collaboration between the Department of Energy (DOE) and private industry, is one of DOE’s key initiatives for research, development, and demonstration of carbon capture and sequestration (CCS) on coal-fired turbines. The program was initiated in 2003 and underwent restructuring in January 2008.

There were five witnesses: (1) Dr. Victor Der, Acting Assistant Secretary for the Department of Energy’s Office of Fossil Energy, (2) Mr. Mark Gaffigan, Director, Natural Resources and Environment Team at the U.S. Government Accountability Office (GAO), (3) Dr. Robert J. Finley, Director, Energy and Earth Resources Center for Illinois State Geological Survey, (4) Mr. Larry Monroe, Senior Research Consultant at Southern Company, and (5) Ms. Sarah Forbes, Senior Associate, Climate and Energy Program at the World Resources Institute.
Summary

In his opening statement, Chairman Baird stated that the problems of overheated gas and ocean acidification are a global problem as the use of coal has expanded. Ranking Member Inglis (R–SC) stressed the importance of technology breakthroughs to retain coal-dependent jobs while controlling carbon dioxide. Rep. Jerry Costello (D–IL) then stated his disappointment at the termination of FutureGen during the last Presidential Administration and called for a renewed commitment to the program.

During the witness testimony, Dr. Der described the current state and projected actions for DOE’s advanced coal program for carbon capture and storage. Mr. Gaffigan summarized the GAO’s report on the restructured FutureGen program and the conclusions for a path forward on policy decisions. He emphasized that the restructured FutureGen is fundamentally different from the original 2003 program. Dr. Finley provided an update on CCS activities at the Midwest Geological Sequestration Consortium and information about the injection site selection process and site monitoring strategies. Mr. Monroe described Southern Company’s role in developing and demonstrating advanced coal technology with the goal of commercial viability, calling cost and timing the two greatest challenges for large scale deployment of CCS. Ms. Forbes described the World Resources Institute’s ongoing activities to establish guidelines and recommendations for the deployment of carbon capture and storage technologies as well as activities and initiatives underway facilitating international collaboration on advanced coal technologies.

During the discussion period, the Members and witnesses considered project scalability, potential coal plant emissions reductions, lessons learned at the Midwest Geological Sequestration Consortium, marketplace carbon pricing, lessons from small-scale projects, and public service commission challenges. Specific to FutureGen, they examined the reasons for program restructuring, cost escalations and miscalculations, the details of the cost sharing agreements with private industry, future international collaboration and sharing of intellectual property, and the importance of FutureGen research to inform future climate change legislation. It was agreed that for carbon capture and sequestration to be successful, there must be incentives for industry to participate and greater public access to information about the safety of CCS technologies.

4.2(c)—Examining Federal Vehicle Technology Research and Development Programs

March 24, 2009

Hearing Volume No. 111-13

Background

On Tuesday, March 24, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to examine the Department of Energy’s (DOE) Vehicle Technologies research and development programs, including light and heavy duty vehicle development and the “FreedomCar”
and “21st Century Truck Partnership” programs, and to discuss potential program changes.

There were four witnesses: (1) Mr. Steven Chalk, Principal Deputy Assistant Secretary of Energy Efficiency and Renewable Energy at the U.S. Department of Energy (DOE), (2) Dr. Kathryn Clay, Director of Research for the Alliance of Automobile Manufacturers, (3) Mr. Thomas C. Baloga, Vice President of Engineering for BMW of North America, (4) Dr. John H. Johnson, Presidential Professor at Michigan Technological University, and (5) Mr. Anthony Greszler, Vice President of Government and Industry Relations for Volvo Powertrain North America.

Summary

In his opening statement, Chairman Baird discussed challenges faced in federal vehicles research and urged a shift in program priorities, stressing the need for a diverse portfolio of technologies and more consistent, long-term research funding. Ranking Member Inglis (R–SC) urged innovation due to the industry’s immense oil consumption and contribution to greenhouse gases and recognized Witness Baloga and BMW for their innovative practices and economic benefit to South Carolina.

During the witness testimony, Mr. Chalk profiled the DOE contribution to advanced vehicle technology development, stressing the importance of R&D alliances with industry and integrated design strategies during economic recession. Dr. Clay offered several guiding principles for the Vehicle Technology Program, emphasizing diverse and high-risk research efforts, and expressed support for DOE’s Hydrogen and Fuel Cell Learning Demonstration and Advanced Battery Manufacturing Programs. Mr. Baloga provided several program recommendations and detailed BMW’s innovative projects and priorities, including those funded in part by DOE. He emphasized the need for research in electric battery and hydrogen-powered vehicles and for support of a diverse technology mix. Dr. Johnson presented recommendations for priorities and funding levels for Vehicle Technologies programs from his perspective as a participant of the 21st Century Truck Partnership and the National Academy’s Committees on Light-Duty Fuel Economy and Medium Heavy-Duty Vehicle Fuel Economy. Mr. Greszler spoke on behalf of the industry members of the 21st Century Truck Partnership, describing several heavy-duty vehicle specific R&D needs and calling for $200 million in federal funding to support heavy-duty vehicle development.

During the question and answer period, the Members and panelists debated the relative merits of various existing transportation innovations and the most effective and appropriate means of achieving an energy independent, environmentally sustainable vehicle fleet. They discussed such topics as the distribution of American Reinvestment and Recovery Act funding, electric battery research and development, domestic job creation, training and retention, waste heat recovery and thermal electrics, ethanol and fuel efficiency standards, flex fuel vehicles, innovations in fuel efficiency, hydrogen fuel, funding levels and sources, and European innovations to date. A major theme was the economic opportunity the burgeoning vehicle technologies present, both for American industry’s
international leadership and domestic job creation. The panelists and Subcommittee agreed that key strategies are investment in an array of diverse technologies and strong, collaborative research partnerships between government, private industry, and universities.

**4.2(d)—Continued Oversight of the National Oceanic and Atmospheric Administration’s Geostationary Weather Satellite System**

*April 23, 2009*

*Hearing Volume No. 111–19*

**Background**

On Thursday, April 23, 2009, with the Honorable Brian Baird (D–WA) presiding, the Committee on Science and Technology, Subcommittee on Energy and Environment held a hearing to discuss the status of the Geostationary Operational Environmental Satellite (GOES) series being developed by the National Oceanic and Atmospheric Administration (NOAA). The satellites are used to detect and track weather systems affecting the Western Hemisphere and are managed in collaboration with the National Aeronautics and Space Administration (NASA).

There were three witnesses: (1) Mr. David Powner, Director of Information Technology Management Issues at the Government Accountability Office (GAO); (2) Ms. Mary Ellen Kicza, Assistant Administrator for Satellite and Information Services at the National Oceanic and Atmospheric Administration (NOAA); and (3) Mr. George Morrow, Director of the Flight Projects Directorate at the NASA Goddard Space Flight Center.

**Summary**

In his opening statement, Chairman Baird warned of interagency friction, budget overruns, and schedule delays with the GOES program, but noted how critical the imagery the satellites provide are to public health, safety, and economies in the U.S. Ranking Member Inglis (R–SC) expressed concerns that a satellite service outage would have great negative effects and committed to identifying potential fixes for the program.

During the witness testimony, Mr. Powner summarized GAO’s findings on GOES current costs and schedule estimates, how satellite capability and coverage could be affected, and key recommendations going forward. Ms. Kicza described steps taken at NOAA to provide early warnings of risk and addressed several of the recommendations issued in the GAO report on the GOES program. Mr. Morrow outlined steps at NASA to minimize costs, schedule and performance risks on satellite GOES–R and explained its efforts to coordinate closely with NOAA on the program.

During the question and answer period, the Members heard from the panelists largely on the circumstances leading to budget and schedule overruns and how to incorporate recommendations and prevent future problems. They also discussed their expectations for GOES, achieving accurate cost estimates, the appropriate role for
Congress in achieving success with the GOES program, and the benefits to be realized from such success.

4.2(e)—Pushing the Efficiency Envelope: R&D for High-Performance Buildings, Industries and Consumers

April 28, 2009

Hearing Volume No. 111–21

Background

On Tuesday, April 28, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing on the role of the Department of Energy’s research and development programs in developing technologies, codes, and standards to enable deployment of net-zero energy, high-performance buildings and support energy efficiency in domestic industries.

There were five witnesses: (1) Mr. Steven Chalk, Principal Deputy Assistant Secretary of Energy Efficiency and Renewable Energy at the U.S. Department of Energy (DOE), (2) Mr. William J. Coad, President of Coad Engineering Enterprises and Chairman of the High-Performance Building Council of the National Institute of Building Sciences; (3) Mr. Paul Cicio, President of the Industrial Energy Consumers of America, (4) Dr. Karen Ehrhardt-Martinez, Research Staff for the Economic and Social Analysis Program at the American Council for an Energy-Efficient Economy (ACEEE), and (5) Dr. J. Michael McQuade, Senior Vice President of Science and Technology at United Technologies Corporation.

Summary

In his opening statement, Chairman Baird noted that buildings consume 40% of energy in the U.S. and explained that several different government programs must coordinate efforts in order to reduce the building and industrial sectors’ energy use. Ranking Member Inglis (R–SC) asserted that because price signals have not encouraged consumer energy efficiency, technology and policy developments may be needed to promote more efficient building design.

During the witness testimony, Mr. Chalk noted that every gain in building efficiency represents a reduction in greenhouse gases and described the Department of Energy’s initiatives toward the goal of affordable net-zero energy residential and commercial buildings by 2020 and 2025, respectively. Mr. Coad provided some historical context for the development of energy efficient buildings and highlighted the urgent need for efficiency in light of the earth’s rapidly dwindling fossil fuel resources. Mr. Cicio argued for federal support of U.S. manufacturing in support of efficiency goals, job creation and retention, and global competitiveness. Dr. Ehrhardt-Martinez provided information on the role of social and behavioral sciences in reducing energy consumption in buildings and made suggestions for program changes at DOE. Mr. McQuade cited the key role of building efficiency in meeting International Panel on Climate Change (IPCC) recommendations and called for a $250 million federal investment over five years to support the research and development needs for optimizing buildings as whole systems.
During the question and answer period, the Members and panelists focused on how to execute best practices in the public, consumer education, the challenges and benefits of building retrofits, consistent labeling, green building standards, efficiency in federal government buildings, implementation of demonstration projects, appropriate funding levels, life-cycle energy pricing, and distributing consumer information. There was an emphasis on social and behavioral research in an integrated approach to energy efficiency and the critical role of efficiency in addressing climate change.

4.2(f)—Expanding Climate Services at the National Oceanic and Atmospheric Administration (NOAA): Developing the National Climate Service

May 5, 2009

Hearing Volume No. 111–24

**Background**

On Tuesday, May 5, 2009, with the Honorable Brian Baird (D–WA) presiding, the Committee on Science and Technology, Subcommittee on Energy and Environment held a hearing to examine potential features of a national entity for climate information collection, presentation, and dissemination, or a National Climate Service (NCS), to be administered under the National Oceanic and Atmospheric Administration (NOAA).

There were nine witnesses divided into three panels. On Panel I: (1) Dr. Jane Lubchenco, Undersecretary for NOAA.

On Panel II: (1) Dr. Arthur DeGaetano, Director of the Northeast Regional Climate Center, (2) Dr. Eric J. Barron, Director of the National Center for Atmospheric Research (NCAR), (3) Dr. Philip Mote, Director of the Oregon Climate Change Research Institute and Oregon Climate Services at Oregon State University, and (4) Mr. Richard J. Hirn, General Counsel and Legislative Director for the National Weather Service (NWS) Employees Organization.

On Panel III: (1) Dr. Michael L. Strobel, Director of the National Water and Climate Center at the United States Department of Agriculture (USDA), (2) Mr. David Behar, Deputy to the Assistant General Manager for the San Francisco Public Utilities Commission, (3) Mr. Paul Fleming, Manager of the Climate and Sustainability Group for Seattle Public Utilities, and (4) Dr. Nolan Doesken, State Climatologist for Colorado and Senior Research Associate at Colorado State University.

**Summary**

In his opening statement, Chairman Baird cited droughts as an example of why a National Climate Service is necessary and called for regionally- and locally-scaled information resources to best implement climate adaptation plans.

During the witnesses’ testimony, Dr. Lubchenco evinced the demand for an NCS, identifying its primary purpose as an information source for effective decision-making, and pledged NOAA’s commitment to thoroughly cooperate with other federal agencies. During the discussion period, the Members and Dr. Lubchenco examined potential structures, coordination strategies, and applications...
of a NCS. They also discussed greenhouse gas monitoring, observable evidence of climate change, and ocean acidification.

In Panel II, Dr. DeGaetano identified the key characteristics of an effective climate services, including partnership and information integration, strong stakeholder relationships, interactive climate analyses and decision tools, a robust computer infrastructure, and responsiveness to local and regional issues. Dr. Barron argued for a comprehensive and authoritative data source and presented key recommendations from the NOAA Science Advisory Board’s Climate Working Group Report, Options for Developing a National Climate Service. Dr. Mote described the climate change monitoring work of NOAA’s nine Regionally Integrated Science and Assessments teams (RISAs) and offered five RISA recommendations for features of a NCS. Mr. Hirn argued that a NCS would duplicate existing efforts at the National Weather Service and suggested instead a consolidation of standing, disparate climate programs at NOAA and NWS. During their discussion period, the Members and witnesses considered past successes of climate forecasting, more on the NCS structure, current inter-office coordination efforts, international coordination, best practices of an NCS, and potential changes at NOAA.

During Panel III, Dr. Stroebel illustrated the information management functions of the Snow Survey, the Water Supply Forecasting Program, and the Soil Climate Analysis Network (SCAN), all under the National Water and Climate Center at USDA. Mr. Behar depicted the water utilities industry’s need for “actionable science” via a NCS to inform regional water activities. Mr. Fleming identified six essential characteristics of a NCS to be strengthened and streamlined from the RISA model as a starting point and recommended strong collaboration with the water utilities sector. Mr. Doesken related how local- and state-level climate experts disseminate information and collaborate with regional and federal partners, and expressed the American Association of State Climatologists’ support for a NCS. During their discussion period, Panel III and the Members discussed the organizational structure of a NCS, interagency coordination, lessons from State climate offices, and the prevention of duplicating services within the federal government.

4.2(g)—A New Direction for Federal Oil Spill Research and Development

June 4, 2009

Hearing Volume No. 111–29

Background

On Thursday, June 4, 2009, the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment met in a legislative hearing to discuss the current federal research and development efforts to prevent, detect, or mitigate oil discharges and to receive testimony on the Federal Oil Spill Research Program Act of 2009 offered by Representative Lynn Woolsey (D–CA).

There were four witnesses: (1) Mr. Douglas Helton, Incident Operations Coordinator at the National Oceanic Atmospheric Admin-
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administration's (NOAA) Office of Response and Restoration (OR&R), (2) Dr. Albert D. Venosa, Director of the Land Remediation and Pollution Control Division at the National Risk Management Research Laboratory, Environmental Protection Agency’s Office of Research and Development (EPA ORD), (3) Rear Admiral James Watson, Director of Prevention Policy for Marine Safety, Security and Stewardship for the United States Coast Guard (USCG), and (4) Mr. Stephen Edinger, Director of the Office of Spill Prevention and Response (OSPR) at the California Department of Fish and Game.

Summary

In his opening statement, Chairman Baird recalled the Exxon Valdez and Cosco Busan oil spills, noting that there are oil spill mitigation and cleanup needs that remain unmet by the Oil Pollution Act of 1990 (OPA 90). Rep. Woolsey introduced her bill and emphasized that it will coordinate federal research and development in a way that ensures interagency cooperation.

During the witness testimony, Mr. Helton expressed concerns that the research and development envisioned by the Oil Pollution Act of 1990 had not been achieved. Dr. Venosa discussed the EPA's Oil Spill Research Program and why oil spill research activities should continue in the federal government. Admiral Watson described the Coast Guard's current role in oil spill research and development, and stated that more R&D was needed in this area. Mr. Edinger shared a story on an oil spill that occurred in San Francisco Bay and reiterated the gaps in oil spill technology that remain an issue today.

During the question and answer period, the Members and witnesses discussed the potential impacts and needs for Rep. Woolsey’s bill, which streamlines oil spill R&D from 17 different agencies down to four: the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the U.S. Coast Guard and the Department of Interior’s Minerals Management Service. Topics discussed included the specific role of each agency, inland oil spills, funding needs, existing coordination structures, industry and university incentives for performing research, the possibility of biofuel spills, community engagement and cleanup volunteer training, and the Oil Spill Liability Trust Fund. Key recommendations included allocating research dollars and activities in proportion to spill causes, coordinating research and sharing information with universities and foreign nations, planning for the best use of community volunteer resources, applying financial risk assessments to the activities of oil companies, further study of Arctic oil spills, improving spill modeling technologies for research and monitoring purposes, and exploring new applications of existing technologies, such as remote sensing, to oil spills. Witnesses agreed that although there has been significant improvement in spill mitigation, response and restoration efforts since the Exxon Valdez spill in 1989, there are still several key areas that need greater resources and coordination, particularly in light of the nation's growing energy demands.
Background

On Tuesday, June 9, 2009, the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment met to discuss H.R. 2729 sponsored by Rep. Ben Ray Luján (D–NM) to formerly authorize the seven existing National Environmental Research Parks (NERPs) as permanent research reserves and to provide guidance for research, education, and outreach activities to be conducted on or in collaboration with the Parks. The hearing also examined other climate and environmental research programs conducted by the Department of Energy (DOE) Office of Science.

There were four witnesses: (1) Dr. Paul Hanson, Ecosystem Science Group Leader at Oak Ridge National Laboratory, (2) Dr. David Bader, Director of the Program for Climate Model Diagnosis and Intercomparison, (3) Dr. Nathan McDowell, Lead Researcher in the Atmospheric, Climate, and Environmental Dynamics Group at Los Alamos National Laboratory, and (4) Dr. Whit Gibbons, Professor Emeritus of Ecology at the University of Georgia and Head of the Environmental Outreach and Education program at the Savannah River Ecology Laboratory (SREL).

Summary

In his opening statement, Chairman Baird commended Rep. Luján for his initiative on the legislation. Rep. Luján stated that H.R. 2729 would provide core funding for an organizational structure to support the important work at research parks.

During the witness testimony, Dr. Hanson discussed advances in climate change science through DOE’s support of terrestrial ecosystem research, stressing the need for long-term and large-scale analysis and identifying several key topics for future inquiry. Dr. Bader testified on the importance of climate modeling, simulation and prediction and the concurrent needs for robust comparative computational systems and scientists. Dr. McDowell highlighted the importance of research parks with an example of activities conducted at the Los Alamos NERP and applauded the Committee’s initiative. Dr. Gibbons emphasized the educational and public outreach enterprises at SREL and emphasized its role in critical advancements in the ecology and energy fields.

During the discussion period, the Members and witnesses discussed potential for research park activities, research in land remediation, funding sources, specific research park projects, environmental degradation and water studies, renewable energy source studies, climate modeling and evidence of climate change. There was a strong emphasis on the benefit of community outreach and education and research opportunities for undergraduate and graduate students.
Background

On Thursday, July 9, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing on the role of the federal government and industry in developing technologies designed to address the inextricable link between our energy and water resources and how deployment of such technologies could help to avoid resource supply disruptions.

There were five witnesses: (1) Dr. Kristina Johnson, Undersecretary of Energy for the U.S. Department of Energy (DOE); (2) Ms. Anu Mittal, Director of Natural Resources and Environment at the U.S. Government Accountability Office (GAO); (3) Dr. Bryan Hannegan, Vice President of Environment & Generation at the Electric Power Research Institute (EPRI); (4) Mr. Terry Murphy, President of SolarReserve, LLC and (5) Mr. Richard L. Stanley, Vice President of the Engineering Division at GE Energy.

Summary

To open the hearing, Subcommittee Chairman Baird and Ranking Member Bob Inglis (R–SC) dispensed with any opening remarks in the interest of expedience. Dr. Johnson testified on DOE’s approach to increasing energy and water efficiency, emphasizing the relationship between water resources and global climate. Ms. Mittal detailed GAO’s findings to date in three key energy-water studies, identifying key emerging technologies in power plant cooling technologies, challenges with biofuel production, and specific federal research and development needs. Dr. Hannegan profiled current industry research efforts and the details of water use as a cooling agent in thermoelectric power generation. Mr. Murphy described the needs and particular challenges of water use in solar energy generation and made suggestions for future policy decisions in the field. Mr. Stanley offered four recommendations for public-private partnerships to address the energy-water link and described GE’s emerging technologies in the field.

During the discussion period, the Members and witnesses discussed the varied opportunities and limitations for modifying water use in energy generation. They identified several major themes including the relationship of carbon emissions with both water and energy, a need for collaborative research and development in industry, academia, domestic federal programs, and other nations, the distinction between water use and water loss, economic considerations of new energy policies, and the need for simultaneous research on water and energy due to their interdependency. Other topics included projected national population growth and accompanying demand for water and energy, uses for grey water, existing energy power plant retrofits, a national goal for water reuse, energy storage technologies and the Smart Grid, water use in biomass crop production, gas turbine efficiency, water demands with
carbon capture and sequestration at coal plants, water desalination, industry enthusiasm for new technologies, water use in cooling nuclear power plants, emissions trading schemes, and job creation.

4.2(j)—New Roadmaps for Wind and Solar Research and Development

July 14, 2009

Hearing Volume No. 111–42

Background

On Tuesday, July 14, 2009, with the Honorable Brian Baird (D-WA) presiding, the Subcommittee on Energy and Environment held a hearing to examine the current status of wind and solar energy research and development programs, and the need for a comprehensive plan to guide future R&D. The Subcommittee received testimony on H.R. 3165, sponsored by Rep. Paul Tonko (D-NY), a bill authorizing a comprehensive program to advance wind energy technologies. The hearing also examined advanced manufacturing techniques for solar equipment and how both solar and wind technologies can help address the United States' growing domestic energy needs.

There were five witnesses: (1) Mr. Steve Lockard, Chief Executive Officer of TPI Composites and Research & Development Committee Co-Chair of the American Wind Energy Association (AWEA); (2) Mr. John Saintcross, Energy and Environmental Markets Program Manager for the New York State Energy Research and Development Authority (NYSERDA); (3) Prof. Andrew Swift, Director of the Wind Science and Engineering Research Center at Texas Tech University; (4) Mr. Ken Zweibel, Director of the George Washington University Solar Institute; (5) Ms. Nancy Bacon, Senior Advisor for United Solar Ovonic and Energy Conversion Devices, Inc.

Summary

In his opening statement, Chairman Baird touched on the enormous untapped potential of wind and solar to meet our country's energy needs. He highlighted the need for a significant upgrade to the transmission grid and substantial investments in new generation equipment. Chairman Baird also expressed his support for H.R. 3165.

During the witness testimony, Mr. Lockard, Mr. Saintcross and Dr. Swift discussed wind energy. Mr. Lockard commended Mr. Tonko's bill and recent industry growth but noted difficulties in market acceptance and reliability, calling for a sustained annual budget of at least $200 million. Mr. Saintcross described NYSERDA's efforts in wind energy as a public corporation at the state level and suggested further research needs in computational modeling and offshore wind energy technologies. Dr. Swift commented on wind turbine cost, performance, reliability, justified the merits of the proposed $200 million investment in wind energy, and highlighted the need for workforce education.
Mr. Zweibel explained that while current solar power costs are higher than other renewables, it has the potential for greatest pay-off over time through domestic competitiveness, job creation, carbon reduction and affordability. He also described the experience of First Solar, Inc. from its engagement in an early government contract for solar film technologies development. Ms. Bacon offered the perspective of a private solar technologies firm, emphasizing the need for U.S. leadership in solar, and explained how distributed photovoltaics can address national energy needs with a host of concurrent environmental and social benefits.

During the question and answer period, the Members and witnesses discussed economic and job creation potential, offshore wind energy generation, energy storage and battery development, government subsidy levels, wind farm efficiency research, wildlife safety around wind turbines, service reliability, feed-in tariffs and incentives to industry, net metering and the smart grid, and solar panel durability. Major themes included the importance of economies of scale in wind and solar deployment, the need for distributed power generation and transmission, and supporting American industry leadership and domestic manufacturing. The Members and witnesses agreed that a solar roadmap was very much needed, and that government investments should work toward wind and solar competing with traditional energy resources in the marketplace without subsidy.

4.2(k)—Effectively Transforming Our Electric Delivery System to a Smart Grid

July 23, 2009

Hearing Volume No. 111–46

Background

On Thursday, July 23, 2009, the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to examine the roles of government and industry in transitioning the Nation’s current power generation, storage and transmission system to a smart grid system. Such an overhaul of our aging energy collection and transmission system would be designed to promote desirable energy consumption patterns and assuage consumer costs.

There were six witnesses: (1) Ms. Patricia Hoffman, Acting Assistant Secretary for the Department of Energy (DOE) Office of Electricity Delivery and Energy Reliability, (2) Ms. Suedeen Kelly, a Commissioner at the Federal Energy Regulatory Commission (FERC), (3) Dr. George Arnold, National Coordinator for Smart Grid Interoperability at the National Institute of Standards and Technology (NIST), (4) Mr. Paul De Martini, Vice President of Advanced Technology at Southern California Edison (SCE), (5) Mr. Jeff Ross, Executive Vice President at GridPoint, Inc., and (6) Mr. Michael A. Stoessl, Group President for Cooper Power Systems.

Summary

In his opening statement, Chairman Baird noted the smart grid’s economic benefits to consumers and the electricity transmission in-
dustry in addition to its potential contribution to climate change mitigation. Ranking Member Inglis (R–SC) also lauded smart grid's potential benefits and expressed his interests in the pace of implementation, agency coordination, and private-public sector investment sharing.

During the witness testimony, Ms. Hoffman described how the Energy Independence and Security Act of 2007 (EISA) and the American Recovery and Reinvestment Act (ARRA) have contributed to DOE's smart grid research, development, and demonstration activities. Ms. Hoffman also identified key areas for future research, such as cybersecurity and phasor measurement units. Ms. Kelly detailed FERC's authority over smart grid issues and its individual and collaborative research and development initiatives to date. Dr. Arnold discussed NIST's efforts in grid standards development and called for careful consideration of security issues, strong public-private partnerships, and international standards compatibility. Mr. De Martini provided the private sector perspective on smart technologies in the state of California, noting the consumer enthusiasm for an updated grid and need for significant R&D and capital investment at the Federal level. Mr. Ross argued for empowering consumer decision making and called for: development of software applications to help utility companies control the electric load; more streamlined Federal smart grid incentives to industry; and a greater number of technology demonstration projects. Mr. Stoessl profiled several key hardware components of an effective grid system and commended DOE for their ARRA smart grid grants evaluation process.

During the question and answer period, the Members and panelists discussed the key benefits of a smart grid and the most effective steps toward a timely implementation of new technologies and immediate energy savings. Topics included “smart meters” and net metering, international interoperability standards, the fate of funds allocated to smart grid in the ARRA, potential energy production savings, peak load management, the need for demonstration projects, superconductive materials, job creation, and workforce development. The panelists agreed that cooperation between agencies, state, and Federal entities, and private industry would be critical to smart grid deployment. They also agreed that a comprehensive smart grid program must consider cyber and national security concerns, and that consumer interfacing, information services, and price signals will be key strategies to realizing energy savings.

**4.2(l)—Biological Research for Energy and Medical Applications at the Department of Energy Office of Science**

**September 10, 2009**

**Hearing Volume No. 111–49**

**Background**

On Thursday, September 10, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to discuss the Department of Energy's biological research activities as conducted through the Office of
Science Biological and Environmental Research (BER) and Nuclear Physics (NP) programs, and their potential practical applications.

There were five witnesses: (1) Dr. Anna Palmisano, Director of the Office of Biological and Environmental Research (BER) at the U.S. Department of Energy (DOE); (2) Dr. Jay D. Keasling, Acting Deputy Director of Lawrence Berkeley National Laboratory and Chief Executive Officer of the Joint BioEnergy Institute at the U.S. Department of Energy; (3) Dr. Allison Campbell, Director of the WR Wiley Environmental Molecular Sciences Laboratory at Pacific Northwest National Laboratory (PNNL); (4) Dr. Aristides A. N. Patrinos, President of Synthetic Genomics, Inc. and (5) Dr. Jehanne Gillo, Director of the Facilities and Project Management Division in the Office of Nuclear Physics at the U.S. Department of Energy.

Summary

In his opening statement, Chairman Baird briefly noted some of DOE’s main biological activities, including the Human Genome Project, next-generation biofuels, carbon sequestration, and non-commercial isotope production. Ranking Member Inglis (R–SC) also lauded the achievements of the Human Genome Project and DOE biofuel development initiatives, noting his personal interest in the BER program as it is supported by research activities at Clemson University in South Carolina.

During the witness testimony, Dr. Palmisano described BER’s three major scientific research initiatives: genome-enabled biology, climate change, and environmental sustainability and stewardship, its three primary facilities, and the new bioenergy research centers, and noted that BER seeks to coordinate closely to other offices within DOE. Dr. Keasling described activities in synthetic biology research at the Joint BioEnergy Institute (JBEI), a DOE Bioenergy Research Center (BRC). Dr. Campbell reviewed research activities at the Environmental Molecular Sciences Laboratory (EMSL) and how the Laboratory works with the National Institutes of Health, the National Science Foundation, private universities and international researchers. Dr. Patrinos described the public-private partnership between BER and Synthetic Genomics, Inc., and recommended that BER be directed to pursue high-risk, high-reward research, continue to nurture public-private collaboration, and re-double its research efforts in genomic science. Dr. Gillo delineated the key features and applications of the DOE Isotope Program within the Office of Nuclear Physics.

During the question and answer period, the Members and panelists explored opportunities for enabling interagency coordination, the potential negative impacts of limiting the scope of BER research to just transportation fuels, and the need for flexible management structures and funding priorities. They also discussed the Office of Nuclear Physics Isotope Program, next steps in cellulosic ethanol and biofuels from algae, technology commercialization through public-private partnerships, beneficial reuse of carbon, nuclear medicine issues, BER research on algae and harmful algal blooms, and the most appropriate role for government in biological research for energy.
Background

On Thursday, September, 2009, with the Honorable Brian Baird (D–WA) presiding, the Committee on Science and Technology, Subcommittee on Energy and Environment held a legislative hearing to examine research and response needs for harmful algal blooms (HABs) and hypoxia and how draft legislation, the Harmful Algal Blooms and Hypoxia Research and Control Act of 2009, can help meet those needs. The growth of HABs are encouraged by over-accumulation of nutrients in the water and can cause hypoxia, a depletion of oxygen in the water, that in turn negatively impacts fish and other aquatic life.

There were six witnesses: (1) Dr. Robert Magnien, Director of the Center for Sponsored Coastal Ocean Research at the National Oceanic and Atmospheric Administration, (2) Ms. Suzanne E. Schwartz, Acting Director of the Office of Wetlands, Oceans, and Watersheds at the U.S. Environmental Protection Agency, (3) Mr. Dan L. Ayres, Lead Biologist on Coastal Shellfish at the Washington State Department of Fish and Wildlife, (4) Dr. Donald M. Anderson, Senior Scientist of the Biology Department and Director of the National Office for Harmful Algal Blooms at Woods Hole Oceanographic Institution, (5) Dr. Greg L. Boyer, Director of the Great Lakes Research Consortium and Professor of Biochemistry at the State University of New York College of Environmental Science and Forestry, and (6) Dr. Donald Scavia, Graham Family Professor of Environmental Sustainability at the University of Michigan.

Summary

To open the hearing, Chairman Baird and Ranking Member Ingalls (R–SC) dispensed with their opening remarks in the interest of time. During the witness testimony, Dr. Magnien described NOAA’s current role in HABs and hypoxia research as authorized through the Harmful Algal Bloom and Hypoxia Research Control Act of 1998 (HABHRCA) and identified two key features of the new draft legislation that would enhance these existing activities and align with NOAA priorities. Ms. Schwartz explained EPA’s role in HAB and hypoxia mitigation, including how the Agency works with individual States, and noted that the non-point source toxins that exacerbate HABs have been difficult to address. Mr. Ayers relayed the importance of mitigation for the U.S. fisheries industry, in particular for West Coast aquaculture, and recommended the establishment of a regional HAB Event Response Program, as well as the continued use of two additional programs, MERHAB (the Monitoring and Event Response for Harmful Algal Blooms Program) and ECOHAB (the Ecology and Oceanography of Harmful Algal Blooms Program). Dr. Anderson described technologies used to mitigate and control HABs and called for authorization of additional response and prevention strategies at the national level. Dr. Scavia
focused on the causes, consequences, and means for controlling hypoxia.

During the question and answer period, Rep. Connie Mack (R–FL) and Rep. Bill Delahunt (D–MA) joined the Committee Members and submitted statements for the record. The Members and witnesses discussed the inefficacy of traditional water treatment strategies to filter toxins and excess nutrients, the trends in ocean “dead zones” and their causes, the state of control and mitigation strategies today, the economic costs of HABs and hypoxia, the role of the EPA in controlling freshwater HABs, and research funding needed to study the causes of HABs and hypoxia.

4.2(n)—Investigating the Nature of Matter, Energy, Space, and Time

October 1, 2009

Hearing Volume No. 111–54

Background

On Thursday, October 1, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to discuss the fundamental physics research activities of the Department of Energy (DOE) Office of Science conducted through the High Energy Physics (HEP) and Nuclear Physics (NP) programs and to examine how these areas of study relate to the work of other DOE program offices and federal agencies.

There were four witnesses: (1) Dr. Lisa Randall, Professor of Physics at Harvard University; (2) Dr. Dennis Kovar, Director of the Office of High Energy Physics and former Director of the Office of Nuclear Physics at the U.S. Department of Energy (DOE); (3) Dr. Piermaria Oddone, Director of the Fermilab National Accelerator Laboratory; and (4) Dr. Hugh Montgomery, Director of Thomas Jefferson National Accelerator Facility.

Summary

In his opening statement, Subcommittee Vice Chairman Paul Tonko (D–NY), substituting for Chairman Baird, recalled the origins of high energy and nuclear physics research in the U.S. through the Manhattan Project during World War II, and noted current activities and investment levels for these research priorities at DOE. Ranking Member Inglis (R–SC) expressed his personal interest in the topic, noting the capacity of HEP and NP to both inspire human curiosity and inform practical technological solutions for our daily lives.

During the witness testimony, Dr. Randall described some of the fundamental questions high energy physics is exploring and warned that the revolutionary applications of some HEP developments cannot often be predicted or sought directly. Dr. Kovar described American leadership in HEP and NP and the resulting benefits to society, calling for sustained federal support and federal investments in scientific infrastructure and research facilities on American soil. Dr. Oddone described American research resources as a beacon to the rest of HEP and NP world and noted that the Tevatron at Fermilab or the Large Hadron Collider particle
accelerators in Geneva, Switzerland may soon be able to observe the predicted Higgs-Boson particle. He also warned that protecting American leadership is essential and described the Particle Physics Project Prioritization Panel (P5) strategic advisory plan for the future of particle physics. Dr. Montgomery described the three research thrusts that define nuclear physics and noted the practical applications of NP in cancer detection, medical testing on the heart, national defense and environmental research.

During the question and answer period, the Members and witnesses explored a number of technical topics in the HEP and NP programs, including string theory, next generation particle accelerators, and dark energy and matter. There was extensive discussion on key strategies for international collaboration and how basic science at DOE can realize the taxpayer investments. The Members and witnesses agreed that more robust outreach and education efforts are needed to communicate DOE’s research goals to the public.

4.2(o)—Biomass for Thermal Energy and Electricity: A Research and Development Portfolio for the Future

October 21, 2009

Hearing Volume No. 111–56

Background

On Wednesday, October 21, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to examine the conversion of biomass, or renewable organic materials such as wood products, animal manures, agricultural crops and wastes, and aquatic materials, into thermal energy and electricity (biopower), and how the Department of Energy (DOE) and Congress can support biopower research and development initiatives.

There were five witnesses: (1) Dr. Don J. Stevens, Senior Program Manager of Pacific Northwest National Laboratory; (2) Mr. Joseph J. James, President of Agri-Tech Producers, LLC; (3) Mr. Scott M. Klara, Director of the Strategic Center for Coal at the National Energy Technology Laboratory; (4) Mr. Eric Spomer, President of Catalyst Renewables Corporation; and (5) Dr. Robert T. Burns, Professor of Agricultural & Biosystems Engineering at Iowa State University.

Summary

In his opening statement, Chairman Baird provided some general background information on biopower and emphasized its immense potential as a fuel source in an increasingly greenhouse gas-conscious and fossil fuel-constrained national economy. Ranking Member Inglis (R–SC) called for more research and technological innovation in renewable biomass fuels and noted the recent bioenergy initiatives from Furman University and the University of South Carolina and the industry’s potential to create jobs.

During the witness testimony, Dr. Stevens described the technology option of pyrolysis for converting biomass into biopower, specifically fast pyrolysis, and pointed to the need for stabilization
and upgrading as the primary technical barrier to pyrolysis and bio-oil development. Mr. James described the activities and challenges at Agri-Tech Producers, a South Carolina-based company that processes cellulosic material for fuel, and provided suggestions for Federal support to the biopower industry. Mr. Klara described some technical and historical aspects of co-feeding biomass materials with coal and described the potential for biological capture of CO₂ through algae cultivation, pointing to biomass availability and food security as key challenges affecting the scale of bio-energy production in a given region. Mr. Spomer described the woody biomass production activities at Catalyst Renewables, based in New York State, and recommended development and funding priorities for DOE. Dr. Burns discussed the research and development needs regarding anaerobic digestion of animal manures to produce energy via biogas.

During the question and answer period, the Members and panelists discussed the contributions of methane to global climate change and methane produced by anaerobic digestion of manures, strategies for diversifying and improving biopower programs at DOE, international intellectual property issues, landfill biogas production, and the energy inputs for processing the biopower fuel products. They also reviewed further activities at Agri-Tech Producers, the relationship of controlled deforestation to forest health, soil quality and how to protect topsoils, the potential for biopower production in urban areas, the sustainability of biopower resources, and the option of using forest products from federal lands for biopower generation. It was noted that any biopower initiative should consider both food security and the energy input needed to prepare biomass for conversion, and that biopower should be carefully weighed in a carbon credits trading scheme.

4.2(p)—The Next Generation of Fusion Energy Research

October 29, 2009

Hearing Volume No. 111–61

Background

On Thursday, October 29, 2009, the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to examine research activities on fusion energy conducted within the Fusion Energy Sciences (FES) program and National Nuclear Security Administration (NNSA) at DOE and the possibilities for international partnerships.

There were five witnesses: (1) Dr. Edmund Synakowski, Director of the Office of Fusion Energy Sciences at the U.S. Department of Energy, (2) Dr. Stewart Prager, Director of Princeton Plasma Physics Laboratory (PPPL), (3) Dr. Thom Mason, Director of Oak Ridge National Laboratory (ORNL), (4) Dr. Riccardo Betti, Assistant Director for Academic Affairs at the Laboratory for Laser Energetics at the University of Rochester, and (5) Dr. Raymond J. Fonck, Professor of Engineering Physics at the University of Wisconsin.
Summary

In his opening statement, Chairman Baird (D-WA) noted that while harnessing fusion energy has thus far proven more difficult than expected, recent reviews by the National Academies and DOE show the recent improvements in the field and potential for future applications. Rep. Ehlers (R-MI), sitting in for the Ranking Member, expressed his enthusiasm for fusion energy as an alternative to traditional sources.

During the witness testimony, Dr. Synakowski briefly described some of the science of fusion energy and technologies supporting its development, including the ITER experimental fusion reactor in Cadarache, France, and noted three main scientific challenges to advancing magnetic fusion. Dr. Prager discussed magnetic fusion as informed by the ReNeW report, commissioned by DOE, and the fusion activities at PPPL. He called for greater research in heat- and neutron-tolerant materials and for renewed U.S. leadership in the field as a whole. Dr. Mason provided more information on ITER and Oak Ridge National Lab's contribution to the project, including how ITER and general fusion research can benefit DOE national labs, U.S. universities and U.S. industry. Dr. Betti described the research needs and status of inertial fusion and noted specific needs in federal programs and facilities, including the National Ignition Facility and the Office of Fusion Energy Sciences at DOE. Dr. Fonck noted four key technical challenges in fusion research and the problem of aging experimental facilities in the U.S. He also provided a plan for encouraging U.S. leadership, a robust fusion energy development program, and world-leading fusion science under realistic budgets over the next ten to twenty years and expressed his support for H.R. 3177, the Fusion Engineering Science and Fusion Energy Planning Act of 2009.

During the question and answer period, the Members and panelists discussed how fusion energy can actually become a usable consumer product and what the consumer prices might ultimately be, the relative merits of fusion to established energy sources and its role in the energy mix as a whole, key arguments for funding fusion research, and national security considerations. They also reviewed some technical features of plasmas in high-energy reactors, materials development, electrifying our transportation systems, anthropogenic global warming and potential carbon contribution of fusion energy, and the appropriate homes for fusion research and regulation in the federal government. There was some consensus that the U.S. should pursue a renewed leadership role in fusion R&D and that fusion can not serve as a substitute to energy conservation or other renewable energy sources.
Background

On Thursday, December 3, 2009, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to discuss the role of the Federal government and industry in developing technologies related to the burgeoning field of marine and hydrokinetic energy generation, including wave, current (tidal, ocean and river), ocean thermal energy generation devices and related environmental monitoring technologies.

There were five witnesses: (1) Mr. Jacques Beaudry-Losique, Deputy Assistant Secretary for Renewable Energy at the Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy (DOE); (2) Mr. Roger Bedard, Ocean Energy Leader at the Electric Power Research Institute (EPRI); (3) Mr. James Dehlsen, Chairman and Founder of Ecomerit Technologies, LLC; (4) Mr. Craig Collar, Senior Manager Energy Resource Development for the Snohomish, Washington County Public Utility District; and (5) Ms. Gia Schneider, Chief Executive Officer of Natel Energy, Inc.

Summary

In his opening statement, Chairman Baird noted that marine and hydrokinetic (MHK) technologies could fulfill 10% of U.S. electricity needs and described the MHK industry’s small slice, to date, of federal research activities. Ranking Member Bob Inglis (R–SC) added that conventional hydropower contributes 6–9% of the current U.S. electrical supply and expressed confidence in the potential of distributed micro-hydro sources and marine hydropower from the coastal waters of South Carolina.

During the witness testimony, Mr. Beaudry-Losique described DOE’s marine and hydrokinetics activities and collaborations thus far and mentioned the Department’s forthcoming industry roadmap. Mr. Bedard noted significant progress in MHK technologies and cost-competitiveness, calling for long-term and consistent federal funding support, but noted the challenges for industry to develop cost-effective operations given the hostile operating environment and the lack of standardized deployment infrastructure. Mr. Dehlsen established the distinction between hydropower and hydrokinetics and discussed the costs and pace of MHK development and deployment in comparison to wind technologies. He also warned against discontinuity in federal support of burgeoning technologies. Mr. Collar described Snohomish PUD’s deployment and monitoring of marine ecosystems in preparation for demonstration-scale tidal turbine energy devices at Admiralty Inlet and noted how difficult or overly burdensome regulatory and licensing requirements can preclude pilot R&D projects. Ms. Schneider discussed her company’s experiences with developing low head hydropower sources and provided suggestions for catalyzing innovation and overcoming environmental challenges. She also argued that retro-
fitting existing irrigation districts, conduits and canals with low-head technologies could provide a cost-effective contribution to the energy grid.

During the question and answer period, the panelists informed the Members in better detail of the processes by which energy would be generated, what advancements are needed to develop these various technologies, and comparative costs and benefits of various energy technologies. They discussed the problem of outsourced manufacturing and test beds, the pace of test bed development, the safety of marine species and other ecological concerns, turbine design, hydrokinetic potential in the Great Lakes, low head technologies, lessons from Verdant Power’s experiences in New York State’s East River, the impacts of MHK installations on scenic views, funding in the American Reinvestment and Recovery Act (ARRA) for MHK, energy production in the Gulf Stream waters, and thermal energy potential in the oceans. The Members and witnesses also focused on the keys to expediting project development, how wave and wind technologies could be combined, the challenges of permitting and regulatory structures, and the need for consistent, long-term and robust federal support of MHK development and deployment.

4.2(r)—Geoengineering II: The Scientific Basis and Engineering Challenges

February 4, 2010

Hearing Volume No. 111–75

Background

On Thursday, February 4, 2010, with the Honorable Brian Baird (D–WA) presiding, the Committee on Science and Technology, Subcommittee on Energy and Environment, held a hearing to explore the scientific foundation of several geoengineering proposals and their potential engineering demands, environmental impacts, costs, efficacy, and permanence. The hearing was the second in a series on geoengineering, following a November 5, 2009 meeting.

There were four witnesses: (1) Dr. David Keith, Canada Research Chair in Energy and the Environment at the University of Calgary; (2) Dr. Philip Rasch, Laboratory Fellow of the Atmospheric Sciences & Global Change Division and Chief Scientist for Climate Science at Pacific Northwest National Laboratory; (3) Dr. Klaus Lackner, Ewing Worzel Professor of Geophysics and Chair of the Earth and Environmental Engineering Department at Columbia University; and (4) Dr. Robert Jackson, the Nicholas Chair of Global Environmental Change and a professor in the Biology Department at Duke University.

Summary

In his opening statement, Subcommittee Chairman Baird and Ranking Member Bob Inglis (R–SC) dispensed with their opening remarks in the interest of time and welcomed the expert witnesses.

During the witness testimony, Dr. Keith emphasized the distinction between the two types of geoengineering strategies, solar radiation management (SRM) and carbon dioxide removal (CDR), and
compared geoengineering to chemotherapy as an unwanted but potentially necessary tool in case of an emergency situation. Dr. Rasch described solar radiation management strategies and suggested first steps for developing an SRM research program, noting that costs could be relatively low but that more sensitive climate modeling tools would be needed. Dr. Lackner described the CDR strategies of carbon air capture and mineral sequestration. He noted that such technologies were compatible with a continued global dependence on fossil fuels and would address the causes, rather than the symptoms, of climate change, but that high costs would be a challenge. Dr. Jackson discussed bio- and land-based geoengineering strategies in both the CDR and SRM categories. He explicated that existing regulatory structures and expertise could accommodate many of these strategies fairly readily, but that both scalability and the foreseeable and unforeseeable impacts on other valuable natural resources, including water and biodiversity, would be problematic.

During the question and answer period, the Members and witnesses discussed the front end costs of geoengineering compared to traditional mitigation alone, the costs and impacts of atmospheric sulfate injections, and creative strategies for chemical and geological carbon uptake. They also explored public education and opinion on geoengineering, the innovative success of the South Carolina company Protera, LLC, the potential effects of increased structural albedo, and the greatest political challenges of climate management. The Members emphasized some existing tools that could reduce the need for geoengineering, such as traditional carbon capture and sequestration (CCS) strategies, the availability and economic viability of fossil fuel alternatives, and energy conservation. All the witnesses agreed that a basic research program on the subject is likely needed, whether for the ultimate goal of deployment or for the sake of risk management.

4.2(s)—Deluge of Oil Highlights Research and Technology Needs for Effective Cleanup of Oil Spills

June 9, 2010

Hearing Volume No. 111–98

Background

On Wednesday, June 9, 2010, the Honorable Brian Baird (D-WA) presiding, the Subcommittee on Energy and Environment held a hearing to explore the research, development, and technology needs for the recovery of oil and effective cleanup of oil spills.

There were nine witnesses divided into two panels. On the first panel: (1) Mr. Douglas Helton, Incident Operations Coordinator for the Office of Response and Restoration at the National Oceanic and Atmospheric Administration; (2) Captain Anthony Lloyd, Chief of the Office of Incident Management and Preparedness at the United States Coast Guard; (3) Ms. Sharon Buffington, Chief of the Engineering and Research Branch of Offshore Energy and Minerals Management at the US Minerals Management Service; and (4) Dr. Albert Venosa, Director of Land Remediation and Pollution Control Division at the National Risk Management Laboratory for the Of-
office of Research and Development at the Environmental Protection Agency.

On the second panel: (1) Dr. Jeffrey Short, Pacific Science Director at Oceana; (2) Dr. Samantha Joye, Professor of Marine Sciences at the University of Georgia; (3) Dr. Richard Haut, Senior Research Scientist at Houston Advanced Research Center; (4) Dr. Nancy Kinner, Co-Director of the Coastal Response Research Center at the University of New Hampshire; and (5) Mr. Kevin Costner, Partner at Ocean Therapy Solutions and WestPac Resources.

**Summary**

In his opening statement, Chairman Baird expressed frustration that the response to the recent BP Deepwater Horizon oil spill was inadequate, and he welcomed this hearing as an opportunity to learn how to improve incident management and response. Ranking Member Hall (R–TX) reiterated his support for off-shore drilling. Full Committee Chairman Bart Gordon (D–TN) lamented the loss of life as a result of the Deepwater Horizon blowout and also called for an improvement of current oil clean up technologies.

In the first panel, Mr. Helton described the research priorities that could lead to a better recovery of spilled oil and then briefly described NOAA’s current activities in the Gulf of Mexico. Captain Lloyd listed the U.S. Coast Guard’s four main oil spill research objectives and accomplishments and encouraged the government to maintain interaction between federal agencies, the private sector, and non-profits to make sure policy and technology breakthroughs are realized. Ms. Buffington discussed the oil spill research at DOI related to oil and gas exploration on the outer continental shelf and the accomplishments of MMS in oil spill research, including the Ohmsett National Oil Spill Response and Renewable Energy Test Facility. In light of the recent oil spill, Ms. Buffington suggested that new research priorities be established. Dr. Venosa described EPA’s oil spill research program, its accomplishments, and further research plans.

During the question and answer session, the Members and the panelists discussed the preparedness level of various federal agencies; the role of regulators in oil spills; prevention measures taken and plans for next-generation response and prevention technologies; if one agency should take the lead during oil spills; international collaboration in prevention research and development; review of the response; the long term effects of dispersed oil in the water column; the risk of hurricanes in the cleanup efforts; response alternatives; interagency communication; and oil spill forecasting. All Members were concerned that the risks of deep water drilling were overshadowed by the benefits and pressed the panelists to comment on this. Several Members expressed frustration that the federal agencies may not have done enough to accept and act on public ideas of oil dispersion and cleanup. Several Members and witnesses agreed that the response was likely inadequate and that a shift towards renewable energy is just as important as continuing to fund oil spill prevention research and development.

In the second panel, Dr. Short pointed out that the United States has the equipment and technology to respond to spilled oil, but not at the scale that is currently being seen in the Gulf. Dr. Short sug-
gested that NOAA should receive more funding for oil spill research and he called for a more aggressive regulatory agenda. Dr. Joye discussed the large number of unknowns that still exist in the Deepwater Horizon oil spill and called for a continuous monitoring and assessment program. Dr. Haut spoke about DOI’s 30 day report and the recent Research Partnership to Secure Energy for America (RPSEA) white paper. He then called for research into preventing incidents, minimizing response times, and determining the value of ecosystems in spill-prone areas. Dr. Kinner cited the accomplishments of the Coastal Response Research Center, a collaboration between NOAA and the University of New Hampshire, before identifying the problems that hindered the advancement of oil spill technologies prior to the recent spill and her suggestions on how to move forward. Mr. Costner largely described the development of his oil separation machine and the frustration that came with its delayed deployment. He described finding himself caught in a catch-22 between development and deployment of oil spill technologies.

During the second question and answer session, Members and panelists discussed whether oil spill cleanup and response research at the federal level had been underfunded; the impact of the Deepwater Horizon spill on the immediate water column; the economics that led to the use of chemical dispersants rather than collection methods; early warning sensors; communication strategies between government agencies, non-government scientists, and industry; technology transfer between research and the marketplace; the possibility of on-water controlled spills to test technologies; identifying a lead agency to manage spills rather than several collaborating agencies; and the economics of the spill recovery process.

4.2(t)—Real-Time Forecasting for Renewable Energy Development

June 16, 2010

Hearing Volume No. 111–100

Background

On Wednesday, June 16, 2010, the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to discuss the roles of the public and private sector in developing an efficient and accurate real-time forecasting system for the integration of variable energy resources into electric grids.

There were six witnesses: (1) Ms. Jamie Simler, Director of the Office of Energy Policy and Innovation at the Federal Energy Regulatory Commission; (2) Dr. Alexander MacDonald, Deputy Assistant Administrator of Laboratories and Cooperative Institutes at the National Oceanic and Atmospheric Administration; (3) Dr. David Mooney, Director of the Electricity, Resources, and Building Systems Integration Center at the National Renewable Energy Laboratory; (4) Dr. Pascal Storck, Vice President of 3TIER; (5) Mr. Grant Rosenblum, Manager of Renewable Integration at the California Independent System Operator; and (6) Dr. Robert Michaels, Senior Fellow at the Institute for Energy Research.
Summary

In his opening statement, Chairman Baird highlighted the enormous renewable energy potential the United States has and how real-time, reliable forecasting could significantly reduce the cost of delivering that energy. Serving as the Ranking Member, Randy Neugebauer (R–TX) also stressed the importance of reliable forecasting for renewable energy integration. In addition, he raised questions about who would be responsible for the additional costs associated with energy deployment.

During the witness testimony, Ms. Simler described the feedback FERC received from its January 21, 2009 Notice of Inquiry (NOI) that asked what barriers exist in impeding the integration of variable energy resources (VERs). She also defined centralized forecasts and decentralized forecasts and suggested both be available to private industries possibly through a consistent, public source such as NOAA. Dr. MacDonald discussed NOAA's current activities in supporting the renewable energy sector and gave examples of how NOAA could further develop its support through improved observation facilities, global models, predictions across a range of timescales, and high-resolution forecasts. Dr. Mooney agreed that high-accuracy, high-resolution forecasts are critical to enabling cost-effective, reliable, large-scale deployment of renewable power generation and that there was significant room for improvement over our current forecasting abilities. He emphasized how improving the public role in the prediction of weather, through better observation methods, higher spatial and temporal resolution, and a better understanding of the physical systems, could aid the private sector's role of converting those predictions into more reliable power plant outputs and save millions of dollars. Dr. Storck, representing the private industry, agreed that the government should make available accurate global and local weather forecasting but not become an alternative to the thriving small businesses that already provide energy forecasting services. Mr. Rosenblum repeated the suggestions of previous witnesses and argued that the federal government should improve the quality, quantity, and temporal scope of its weather forecasting. Dr. Michaels cautioned the committee to support additional funding in forecasting because of the yet unproved capabilities of wind energy which is largely supported by subsidies.

During the question and answer period, the Members and panelists focused on the potential economic savings of improved forecasting; the roles of the public and private sector in forecasting; difficulties in siting new projects; researching the storage of energy and its role in integrating intermittent energy sources to an existing grid; information gathering and sharing; renewable energy's potential for job creation; and the difficulties that lie ahead for wind power. The Members and witnesses agreed that the public sector needed to improve its weather forecasting for the benefit of the private sector and that increasing America's renewable energy portfolio is the right direction, though there was disagreement over whether it created or destroyed jobs.
4.2(u)—Deepwater Drilling Technology, Research, and Development

June 23, 2010

Hearing Volume No. 111–101

Background

On Wednesday, June 23, 2010, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to examine the technologies, standards, and practices for safe deepwater drilling operations, and the government’s role in sponsoring technology development and commercial deployment. The hearing was held in light of the April 2010 Deepwater Horizon drilling rig explosion at the Macondo Prospect site in the Gulf of Mexico. The hearing helped to inform H.R. 5716, the Safer Oil and Natural Gas Drilling Technology Research and Development Act.

There were four witnesses: (1) Mr. James Pappas, Vice President, Research Programs at Research Partnership to Secure Energy for America (RPSEA); (2) Dr. Benton Baugh, President, Radoil, Inc.; (3) Mr. Erik Milito, Group Director, Upstream and Industry Operations, American Petroleum Institute (API); and (4) Mr. Gregory McCormack, Director, Petroleum Extension Service, University of Texas, Austin.

Summary

In his opening statement, Chairman Baird stressed the necessity for prioritizing safety in the fast moving, highly-competitive field of energy technologies and called for users, investors, and energy officials to all hold energy corporations responsible for accident prevention.

During the witness testimony, Mr. Pappas described the programs already underway at RPSEA relating to safety and environmental studies. He proposed new programs to conduct research and develop technologies that would enhance response times to an incident and increase understanding of the vulnerable ecosystems in the Gulf. Dr. Baugh delivered a favorable opinion on the current safety level of drilling equipment from the perspective of a manufacturer. He described the multiple levels of testing that all drilling equipment must go through and posited that the Macondo well blowout resulted from operational failure, rather than equipment failure. Mr. Milito addressed API’s commitment to maintaining standards and industry quality programs and described API’s response to the BP oil spill, which includes a reviewing of the failed systems, improving existing standards, and creating new ones to raise the level of safety in the oil industry. Mr. McCormack lamented the shift of the petroleum industry over the past 40 years from investment-driven to cost-driven and argued that industry considers workforce training a cost, rather than an investment. He provided suggestions on how the government can help promote a better trained workforce.

During the question and answer period, Members and panelists focused on the safety and improvement of current technologies and...
systems; how to reduce human error through better training; responsibilities of different government entities (appropriators, regulators, coordinators, legislators) in the improvement and deployment of safety systems; the drilling moratorium; and an evaluation of government oil and gas research and development programs. Both the Members and the panelists agreed that many questions could not be answered until a full investigation of the Macondo well blowout had been completed.

4.2(v)—A Rational Discussion of Climate Change: The Science, the Evidence, the Response

November 17, 2010

Hearing Volume No. 111–114

Background

On Wednesday, November 17, 2010, with the Honorable Brian Baird (D–WA) presiding, the Subcommittee on Energy and Environment held a hearing to discuss the basic science, evidence, and the response to climate change.

There were twelve witnesses on three panels. On the first panel: (1) Dr. Ralph Cicerone, President of the National Academy of Science; (2) Dr. Richard Lindzen, Alfred P. Sloan Professor of Meteorology for the Department of Earth, Atmospheric and Planetary Sciences at Massachusetts Institute of Technology; (3) Dr. Gerald Meehl, Senior Scientist of the Climate and Global Dynamics Division at the National Center for Atmospheric Research (NCAR); and (4) Dr. Heidi Cullen, Chief Executive Officer and Director of Communications for Climate Central. On the second panel: (1) Dr. Patrick Michaels, Senior Fellow in Environmental Studies for the Cato Institute; (2) Dr. Benjamin Santer, Atmospheric Scientist for the Program for Climate Model Diagnosis and Intercomparison at Lawrence Livermore National Laboratory; (3) Dr. Richard Alley, Evan Pugh Professor for the Department of Geosciences and Earth and Environmental Systems Institute at The Pennsylvania State University; and (4) Dr. Richard Feely, Senior Scientist for the Pacific Marine Environmental Laboratory at the National Oceanic and Atmospheric Administration. On the third panel, (1) Rear Admiral David Titley, Oceanographer and Navigator of the U.S. Navy; (2) Mr. James Lopez, Senior Advisor to the Deputy Secretary for the U.S. Department of Housing and Urban Development; (3) Mr. William Geer, Director of the Center of Western Lands for the Theodore Roosevelt Conservation Partnership; and (4) Dr. Judith A. Curry, Chair of the School of Earth and Atmospheric Sciences at Georgia Institute of Technology.

Summary

In his opening statement, Chairman Baird discussed scientific integrity and called for a greater investment in clean energy whether or not the science behind climate change is acknowledged or not. Ranking Member of the Full Committee Ralph Hall (R–TX) delivered a searing commentary of the Obama Administration’s plans to institute a cap and trade program and called into question the motives behind scientific claims. Ranking Member of the Sub-
committee Bob Inglis (R–SC) called for climate scientists to see the coming years under a more skeptical Congress as an opportunity to teach.

During the witness testimony for the first panel, Dr. Cicerone spoke about climate change in Earth’s history, the science of the greenhouse effect, anthropogenic emissions, observed changes, and areas for further research. Dr. Lindzen questioned the issues of concern around global warming, citing the differences between model predictions and observations with regards to climate sensitivity. Dr. Meehl delivered a history of climatology and then described the stresses of adding GHG into the atmosphere, the difference between climate modeling and weather modeling, uncertainties in modeling, and the implications of global warming. Dr. Cullen explained the difference between climate and weather, how we measure CO₂, how we fingerprint CO₂, and called for preemptive action to combat the negative effects of global warming. During the question and answer session, the Members and panelists discussed the importance of CO₂ in surface temperature; the proportion of record highs to record lows; additional forcing effects of water vapor and other GHG’s; equilibrium response of the climate system to a doubling of CO₂; the challenges of moving toward renewable energy; the intersect of science and policy; and the role of CO₂ as a heat absorber.

During the witness testimony for the second panel, Dr. Michaels downplayed the degree to which humans have influenced climate, arguing that this influence is less than the Intergovernmental Panel on Climate Change (IPCC) models predict. Dr. Santer cited evidence that natural causes alone are not sufficient for explaining recent changes in the climate system. Dr. Alley discussed climate change as it relates to sea level rise and melting ice sheets. Dr. Feely explained the evidence and the negative economic and environmental effects of ocean acidification as a result of heightened emissions of CO₂.

During the third question and answer session, the Members and panelists focused on ocean acidification; methods in measuring ice sheets, CO₂ fingerprinting; cooling effect of sulfate aerosols; the role of uncertainties in the scientific method; the role of the sun in the climate system; and disagreements over how Greenland reacted to past warming and cooling periods. Dr. Bartlett again called for a shift towards renewable energy in the interest of national security as well as for environmental considerations.

During the witness testimony for the third panel, Rear Admiral Titley discussed why the Navy is interested in climate change and how they are responding to the concurrent opportunities and challenges. Mr. Lopez told the Members how HUD is working to develop more sustainable, resilient communities through partnerships with other agencies and within the department. Mr. Geer described his experiences as a wildlife biologist working with hunters and fishers to prepare for the negative effects of climate change on wildlife populations. Dr. Curry argued that the magnitude of anthropogenic climate change is uncertain, critiqued the way policy should handle the problem, and called for more transparent, available data records and models.
During the third question and answer period, the Members and panelists focused on the Navy’s approach to weather forecasting; the possibility of ice-free conditions in the arctic; collaboration between agencies; making housing and community infrastructure decisions in light of climate change uncertainty; incorporating co-benefits into infrastructure; the possibility of a government climate service and suggestions as to how it could be structured; predictions of global warming’s effect on salmonid populations; invasive species; population issues surrounding global warming; and the credibility of various scientific outlets in the internet age.
4.3—SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

4.3(a)—The Agency for Toxic Substances and Disease Registry (ATSDR): Problems in the Past, Potential for the Future?

March 12, 2009

Hearing Volume No. 111–10

Background

On Thursday, March 12, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight, held a hearing to examine weaknesses and problems in the Agency for Toxic Substance and Disease Registry. The Subcommittee previously held a hearing on ATSDR’s health consultation on formaldehyde exposure in FEMA trailers provided to Hurricane Katrina and Rita victims in April 2008, and subsequently released a staff report on the same topic in September 2008. The hearing explored why ATSDR has refused to change portions of a health report, described by the EPA as “questionable” and “misleading,” regarding asbestos contamination on a beach on Lake Michigan in Chicago. In addition, a British scientist described the flawed methods ATSDR used to investigate depleted uranium exposures among residents in Colonie, New York and how he and colleagues succeeded in discovering depleted uranium exposures among 20% of the resident population they tested there.

Eight witnesses testified on three panels: (1) Mr. Jeffery Camplin, President, Camplin Environmental Services, Inc; (2) Dr. Ronald Hoffman, Professor, Tisch Cancer Institute, Department of Medicine, Mount Sinai School of Medicine; (3) Professor Randall Parrish, Head, Natural Environmental Research Council (NERC) Isotope Geosciences Laboratory, British Geological Survey; (4) Mr. Salvador Mier, Local Resident, Midlothian, Texas, and Former Director of Prevention, Center for Disease Control; (5) Dr. Henry S. Cole, President, Henry S. Cole & Associates, Inc., Upper Marlboro, MD; (6) Dr. David Ozonoff, Professor of Environmental Health, Boston University School of Public Health; (7) Mr. Ronnie Wilson, Former Ombudsman, Agency for Toxic Substances and Disease Registry; and (8) Dr. Howard Frumkin, Director, National Center for Environmental Health and Agency for Toxic Substances and Disease Registry.

Summary

In his opening statement, Chairman Miller stated that ATSDR is failing to perform its stated mission of protecting the public, producing scientifically flawed analyses with a resistance to peer review. Chairman Miller called for a hard look at ATSDR because the
American people and those dedicated to protecting the public’s health deserve better, hoping that ATSDR could faithfully and effectively perform its stated mission. Ranking member Dr. Paul Broun (R–GA) stated that although ATSDR’s work is complex, the public nevertheless deserves to have an agency they can trust and hoped that the hearing would help ATSDR learn how it needs to improve.

During the first panel of witnesses, Mr. Camplin stated that ATSDR violated its mission to serve the public by failing to use valid science, by not taking responsive public health actions, and by providing untrustworthy health information. Mr. Camplin said he was there to, “demand accountability for the harm caused to public health by the inexcusable and deliberate behavior of ATSDR staff in downplaying elevated levels of microscopic asbestos along the entire Illinois Lake Michigan shoreline.” Dr. Hoffman testified to ATSDR’s lack of scientific integrity and willingness to investigate potential environmental causes of a polycythemia vera cancer cluster in Pennsylvania, leading to false conclusions and a disregard for important scientific evidence. Dr. Parrish drew on his experience with ATSDR surrounding the pollution of Colonie, NY, saying ATSDR’s public health report falsely concluded there was no threat of pollution, lacked depth and substance and failed to address community concerns with adequate scientific data. Mr. Mier testified that ATSDR did not conduct an analysis of potential public health harm from cement kilns in Midlothian, Texas, that was scientifically sound and that ATSDR ignored empirical evidence and lacked the overall ability to perform an objective analysis as their stated mission requires them to do.

During the question and answer period, the Members and panelists focused on ATSDR’s deficiencies and benefits of peer review. Dr. Broun and panelists discussed ways to fix ATSDR, focusing on the need for a new culture and leadership. Mrs. Dahlkemper and panelists discussed the geographic prevalence of deficiencies and the level of public awareness of public health findings. Mr. Bilbray and panelists discussed the specifics of asbestos. Mr. Grayson then spoke about Vieques, Puerto Rico and Mr. Tonko discussed Colonie, NY with Dr. Parrish. The discussion ended with Chairman Miller and Mr. Mier and Dr. Hoffman discussing animals as sentinels of human health in Midlothian, Texas.

During the second panel of witnesses, Dr. Cole stated that ATSDR must undergo serious changes in the way it approaches and conducts science as well as the way it relates to communities if it is to deserve tax-payer funding. Dr. Ozonoff discussed how work of ATSDR remains disappointing, stressing the agency’s need for new leadership. Mr. Wilson called for a reorganization of ATSDR.

During the question and answer period for the second panel, Chairman Miller and panelists focused on the need for peer review within ATSDR and discussed the lack of public exposure regarding the public health information gathered by ATSDR. Chairman Miller and panelists also discussed how to effectively approach inconclusive evidence as well as the difficulty of epidemiology, all agreeing that sufficient investigation and creativity is required for success. Dr. Broun and panelists focused on potential fixes, with Dr.
Ozonoff calling for an increased passion for public health and research, and Dr. Cole arguing that health is holistic and needs the participation of many different organizations.

During the third panel, Dr. Frumkin noted ATSDR's various successes and challenges while also stating that ATSDR is taking action to improve its approach to carrying out its mission, its review of scientific administration processes and management practices, and overall improvement of scientific procedures.

During the question and answer period for the third panel, Chairman Miller asked Dr. Frumkin if he stood by his decision to not look at animals for signs of potential human harm. Dr. Frumkin responded that animals are very well-recognized valuable sentinels, but that his small agency does not have the skill set to look into such matters. Dr. Frumkin also said he would be open to looking into a peer review process but was concerned that it would hold back the reports from reaching the communities in a timely manner.

4.3(b) — Follow the Money, Part I: Accountability and Transparency in Recovery Act Science Funding

March 19, 2009

Hearing Volume No. 111–12

Background

On Thursday, March 19, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing to examine the accountability and transparency provisions in the American Recovery and Reinvestment Act (hereafter cited as the Recovery Act). Of the agencies receiving 'stimulus' funds and represented at this hearing, the Department of Energy (DOE) received $15.9 billion, the National Aeronautics and Space Administration (NASA) received $1 billion, the National Science Foundation (NSF) received $3 billion, the National Institute of Standards and Technology (NIST) received $580 million, and the National Oceanic and Atmospheric Administration (NOAA) received $830 million in Recovery Act funding. A second hearing on this topic was held on Tuesday, May 5, 2009, entitled “Follow the Money Part II: Government and Public Resources for Recovery Act Oversight.”

Nine witnesses testified at this hearing: On the first panel: (1) Dr. Cora Marrett, Deputy Director (Acting) and Senior Accountability Officer, National Science Foundation; (2) Mr. Ronald R. Spoehel, Chief Financial Officer, National Aeronautics and Space Administration; (3) Ms. Ellen Herbst, Senior Official for Recovery Implementation, Department of Commerce; and (4) Mr. Matthew Rogers, Senior Advisor to the Secretary, Department of Energy. Serving as the second panel were (1) Mr. Tim Cross, Inspector General (Acting), National Science Foundation; (2) Mr. Todd Zinser, Inspector General, Department of Commerce; (3) Mr. Gregory H. Friedman, Inspector General, Department of Energy; (4) Ms. Eileen Norcross, Senior Research Fellow, Mercatus Center at George Mason University; and (5) Ms. Patricia Dalton, Managing Director,
Natural Resources and Environment Division, Government Accountability Office.

Summary

Chairman Miller opened the hearing by noting that the need to spend Recovery Act funds quickly does not relieve agencies of the responsibility to distribute and monitor that funding with utmost accuracy and accountability. The Chairman acknowledged the difficulty of this task, but expressed high expectations for the agencies. Ranking Member Paul Broun (R–GA) expressed disappointment with the number of earmarks in the Recovery Act, and in his opening statement, focused on the need to prevent waste, fraud, abuse and mismanagement in agencies’ distribution of funding.

During the first witness panel, composed of accountability officials from science agencies, Dr. Marrett expressed her confidence in NSF’s ability to meet high standards for competitiveness, timeliness, and accountability in distributing Recovery Act funding, as well as the readiness of the research and education communities to receive it. Mr. Spoehel assured the Subcommittee that NASA’s preparation for Recovery Act activities had been well underway for some time, and that the Agency aimed to be consistent with Congressional and Office of Management and Budget (OMB) guidance. Ms. Herbst spoke about the coordination of the five different Commerce agencies receiving stimulus funds, and noted that the Department expected to be on time submitting its spending plans to Congress. Mr. Rogers spoke about DOE Secretary Chu’s four objectives in Recovery Act activities: “get projects underway quickly, invest in projects with lasting value, exercise an unprecedented degree of transparency and oversight, and deliver a tangible down payment on the Nation’s energy and environmental future.”

During the question and answer period for the first panel, the Members and panelists focused on the timeline for distributing Recovery Act funding and whether or not agencies are equipped to meet requirements for transparency. Other topics discussed included the difficulty in measuring the number of jobs created under Recovery Act projects and other milestones used to measure success; the need to target the most economically depressed areas of the country; ethanol, clean coal and the definition of ‘green’ energy; the needs of NOAA’s National Polar-orbiting Operational Environmental Satellite System (NPOESS); interagency cooperation; and the ability of agencies to manage Recovery Act funds when the amount represents a major increase over a typical year’s budget. Ranking Member Broun also expressed concern with the possibility of funding projects which do not meet standards of scientific integrity or merit, including, he argued, those related to the theory of global warming. Ranking Member Broun and Rep. Bilbray (R–CA) both noted their fear of Recovery Act census funding being awarded to organizations under criminal investigation, including ACORN.

The second panel was composed of agency inspectors general as well as representatives from a regulatory think tank and GAO. Mr. Friedman outlined his risk-based oversight strategy for evaluating internal controls, effectiveness, metrics for success, and fraud awareness at DOE. Mr. Zinzer assured the Subcommittee that Commerce had assigned some of its ‘very best people’ to lead and
oversee Recovery Act activities, and identified six areas of risk on which the Office of the Inspector General intended to focus. Mr. Cross identified stimulus-related challenges unique to NSF, including the challenge of significantly, but temporarily, increasing staffing levels in order to handle the Recovery Act workload. Ms. Norcross of the Mercatus Center spoke to the critical need for transparency in stimulus spending in order to restore credibility in government. Given the incredible amount of data to be collected and analyzed, she called it a “monumental, if not impossible, task for a centralized entity, no matter how many auditors and analysts government commits to the job.” She pointed to the possibility of effectively monitoring this data via ‘crowd sourcing,’ as in the Wikipedia model of information collection, but noted that this would require stronger and more specific reporting requirements. Finally, Ms. Dalton spoke about the accountability community responsible for overseeing Recovery Act spending, which in addition to GAO, includes the IGs, state auditors, local government auditors, and the Recovery Accountability and Transparency Board, focusing specifically on GAO’s role and ongoing risk assessment processes.

The second panel’s question and answer discussion focused on changes that needed to be made to the federal government’s procurement processes and to the Recovery.gov reporting mechanism. Ranking Member Broun again encouraged the agencies not to award funding to ACORN or any organizations under investigation for criminal activities. The members and witnesses also discussed the Recovery Accountability and Transparency Board, composed of ten Inspectors General, and its findings to date; further technical issues with the Recovery.gov website; and whether or not the agencies were equipped to handle the additional workload of Recovery Act activities.

4.3(c)—The Role of Science in Regulatory Reform

April 30, 2009

Hearing Volume No. 111–23

Background

On Thursday, April 30th, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing examining President Obama’s call for updating the Federal regulatory review process and the role of the Office of Information and Regulatory Affairs (OIRA). Two previous Subcommittee hearings in the 110th Congress focused on how the Bush administration used OIRA to block, hinder or weaken federal regulation.

There were five witnesses: (1) Caroline Smith DeWaal, Director, Food Safety Program, Center for Science in the Public Interest; (2) Rick Melberth, Ph.D., Director, Federal Regulatory Policy, OMB Watch; (3) Wesley Warren, Director of Programs, National Resources Defense Council; (4) Cary Coglianese, Ph.D., Associate Dean and Edward B. Shils Professor of Law and Professor of Political Science, University of Pennsylvania Law School; and (5) Rena Steinzor, Professor of Law, University of Maryland.
In his opening statement, Chairman Miller highlighted the recent withdrawal of the Bush Administration’s Executive Order 13422. Of the eight points that President Obama directed the Office of Management and Budget (OMB) to address in its recommendations, Rep. Miller clarified that this hearing would focus on three: the relationship between OIRA and the agencies; disclosure and transparency; and the role of cost-benefit analysis in the regulatory process. Ranking Member Paul Broun (R-GA) agreed on the importance of the hearing’s topic, but noted that people often disagree on whether decisions are made based on policy instead of science.

During the witness testimony, Dr. Melberth discussed the relationship between OIRA and the federal agencies responsible for protecting the public, citing a report which holds that agencies and not OIRA should be the decision- and regulation-making bodies of the Federal government. Ms. DeWaal identified a number of problems with OIRA’s regulatory review process, and argued that fundamental changes are necessary to eliminate delays in processing regulation. Mr. Warren acknowledged the important role that OIRA plays, and cautioned against the Office’s substituting their own scientific judgment instead of simply overseeing the agencies’ compliance with scientific standards, citing political manipulation under the Bush administration as one negative consequence of doing so. Dr. Coglianese also cautioned against using science as a ‘cloak’ for the policy decision-making process, noting that agencies sometimes misleadingly suggest that science is the basis for political decisions. Ms. Steinzor argued that the OIRA Administrator’s new role should be helping agencies to pass more regulation, not less—and that OIRA should stay out of science policy altogether.

During the question and answer period, the Members and panelists focused on appropriate roles for OIRA and the White House in overseeing regulation, separating policy review from science review, and potential fixes for OIRA. Other topics included creating a more streamlined, reactive regulatory review process, decoupling the science process from the policy to allow faster updates to risk-oriented science databases, and the use of OMB’s Performance Assessment and Rating Tool (PART). They also discussed EPA’s Integrated Risk Information System (IRIS), a centralized review of records, whether the Obama administration should retain any features of Executive Order 13422, and the issue of granting greater public access to OIRA communications.

4.3(d)—Follow the Money, Part II: Government and Public Resources for Recovery Act Oversight

May 5, 2009

Hearing Volume No. 111–25

Background

On May 5, 2009, the Honorable Brad Miller (D-NC) presiding, the Subcommittee on Investigations and Oversight held a hearing on the efforts to continue oversight of the accountability and trans-
pensity provisions in the American Recovery and Reinvestment Act (hereafter cited as the “Recovery Act”). With the capabilities of the Internet, new channels for gathering information increase the opportunity to forestall misuse of government resources as they happen, not when they are identified in audits months or years later. The Recovery Act calls for citizen involvement; the Subcommittee has asked the panel how to assure this happens.

Seven witnesses testified. Panel one consisted of: (1) Mr. Earl Devaney, Chairman, Recovery Accountability and Transparency Board; and (2) Mr. Gene Dodaro, Comptroller General of the United States (Acting), Government Accountability Office. On panel two: (1) Dr. Clarence Newsome, President, Shaw University (Raleigh, NC), representing the National Association for Equal Opportunity in Higher Education; (2) Dr. Gary Bass, Founder and Executive Director, OMB Watch (Washington DC); (3) Jerry Ellig, Senior Research Fellow, Regulatory Studies Program, the Mercatus Center, Georgia Mason University (Arlington, VA); (4) Ms. Danielle Brian, Executive Director, Project on Government Oversight (Washington DC); and (5) Mr. Eric Gillespie, Senior Vice President, Products, Technology and Information, Onvia (Seattle, WA).

Summary

In his opening statement, Chairman Miller expressed curiosity and concern regarding the distribution of Recovery Act funds, where the money is going and whether it is being fairly distributed. He also wondered if the act was improving the economy, how many jobs had been saved and how many people it has put to work. Additionally, Chairman Miller said the hearing would raise some questions about the methods of performance reporting. Finally, he touched on the importance of protection for potential whistleblowers, a vital part of measuring the Act’s success and influence.

Ranking Members Paul Broun (R–GA), in his opening statement, stated that identifying waste, fraud and abuse is a non-partisan endeavor, stressing the need for Congress to, “accurately assess the effectiveness of the Act by using metrics to track success and evaluate outcomes.” Furthermore, Dr. Broun stated that, “the American people need to know what they got for their money. Since the stimulus bill was sold as a means to jumpstart our economy and create jobs, it is important to identify baselines, track progress, and evaluate whether those outcomes were the result of a stimulus act or by other means.”

During the first panel’s testimony, Mr. Devaney discussed the efforts and progress of the Recovery Board, saying the Board has a dual mission, establishing and maintaining a website and coordinating and conducting oversight of Recovery funds to help minimize fraud, waste, or mismanagement. The Board has also created a Recovery funds working group created to foster participation and input from all 28 IGs that oversee agencies receiving Recovery Act funds. The Board has also developed a procurement checklist to assist federal agencies charged with spending Recovery Act funds. Because the states also had important oversight roles, the Board sought to develop immediate relationships to coordinate Recovery Act responsibilities.
Mr. Dodaro spoke about the efforts of the GAO in coordinating with the broader accountability community to fulfill GAO’s duty of providing bimonthly reviews of the uses of the Recovery funds by selected states and localities. Mr. Dodaro also discussed a series of recommendations meant to strengthen the accountability features at the State level as well as the challenges of accountability.

During the question and answer period for the first panel, Members and panelists focused on the issues of information transparency and compatibility, protection of whistleblowers, indications of success, tracking money at the local level, and agency compliance with Recovery Act requirements.

Opening the second panel, Dr. Newsome recounted the problems that historically African American colleges and universities encountered when seeking to compete fairly for access to Recovery Act funds. Dr. Newsome cited the narrow timeframe a recipient was required to stay within upon receipt of an award. According to Newsome, “many of the institutions seeking these funds are not planning to use them to begin a new program but to take a here-tofore isolated program and expand it to improve infrastructure and vastly improve academic programs by institutionalizing them so they can be studied more extensively and more inclusively than the current arrangement allows.”

OMB Watch, according to Dr. Bass, sought improvements to the Act’s transparency mechanisms. First, making sure lower tiers of recipients report information to catch the full distribution of funds. The agencies should also be fully open about allocation. Given the critical role of reporting mechanisms for the public in achieving transparency, Dr. Bass focused on the challenges of discerning what kind of data is going to be reported, and at what level of detail, and where it would be reported. He ended his testimony by saying that we need to create a new dialogue for talking about Federal spending, allowing new opportunities for sharing information and improving the quality of government funded programs.

Dr. Ellig discussed his and his colleagues’ efforts to encourage the development, adoption, and use of performance measurement and performance information by the Federal Government. He also stated his support for the Obama Administration’s request for agencies to use the Government Performance and Results Act’s measures and goals in determining the results of the Recovery Act spending. Dr. Ellig ended by stating that in order to truly gauge the effect of this spending and borrowing, macro-economic analysis should be used, not only the numbers reported in the database. He said the data only gives up some of the picture, and macro-economic analysis will help fill in the rest.

Ms. Brian discussed recommendations for improving resources for auditors, investigators and whistleblowers. She said there are certain provisions that provide great opportunity for oversight while other protections are insufficient or non-existent, potentially allowing for fraud and misuse of funding. She ended by saying that, “the stars are not in complete alignment for taxpayers to benefit from whistleblower disclosures, audits and investigations of misconduct in the Recovery Act spending, but the weaknesses are fixable.”
Mr. Gillespie discussed the difficulty of tracking vast sums of money as well as various barriers to government transparency. He also recommended ways of helping Recovery.org become more successful, saying in particular, that, “in order to maximize use and adoption, the data has to be available in formats that have low barriers to use.”

During the question and answer period following the second panel, Members and panelists discussed achieving detail in data tracking, monitoring job creation, and providing equitable funding access. Chairman Miller ended the hearing by stating the need for continued oversight and investigation on this subject in order to ensure accountability.

4.3(e)—The Science of Insolvency

May 19, 2009

Hearing Volume No. 111–27

Background

On Tuesday, May 19, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing to examine what it means for a financial institution to be “solvent” given the complexity of global financial markets. In order to do this, the Subcommittee asked several prominent economists how the tools of their discipline can be used in making determinations of current solvency and projections of future solvency on an objective, scientific basis.

There were four witnesses: (1) Dr. Jeffrey Sachs, Director, The Earth Institute at Columbia University; (2) Dr. Simon Johnson, Ronald A. Kurtz Professor of Entrepreneurship, MIT Sloan School of Management; (3) Dr. Dean Baker, Co-Director, Center for Economic and Policy Research; and (4) Mr. David John, Senior Research Fellow, Heritage Foundation.

Summary

In his opening statement, Chairman Miller began by calling the banking sector “desperately ill,” but also noted the difficulty of concluding whether a single institution is actually insolvent because of the problems of valuing illiquid assets. The Chairman also discussed the validity and usefulness of stress tests used to evaluate how the largest banks would perform in a severe recession. Ranking Member Broun (R–GA), noting that “[y]ou can apply math to finance, but that does not make it a science,” cautioned the Committee against relying on scientific or economic models as the sole basis for decision making during this financial crisis or in any other difficult situation.

During the testimony, Dr. Sachs stated that while there are many things we do not know about the science of insolvency, we do know that the high leveraging occurring in major banks necessitates regulation. He argued that the FDIC receivership model is the best model to use in dealing with financial institutions in trouble, and proposed four other standards that would better allow the government to prevent major financial collapses.
Dr. Johnson noted three major issues highlighted by the current financial crisis: the need to reevaluate incentives for financial industry employees; the existence of perverse economic and political incentives for the institutions themselves; and the need for protection of consumers, who are easily taken advantage of during times of economic upheaval.

Dr. Baker argued that bad mortgages were the real cause of the crisis, that a market in residential real estate still exists and is capable of properly pricing assets, and that the government hasn’t reacted correctly to the results of the stress tests, whether or not the tests themselves were inadequate.

Mr. John said that the stress tests, although primarily designed to distract people from the crisis, had been successful and cost-effective. He also stated that unregulated sectors of the financial industry—often sectors that are relatively new to the industry—are usually where problems arise, and that it is difficult, but necessary, for the government to establish some control over these sectors of the economy.

During the question period, Members and panelists discussed the implications of the stress tests, the current state of the mortgage market and how to determine the right size for financial firms. Other topics addressed were the validity of stress tests; assessment criteria for banks; how to spot a further economic downturn in advance; the influence of a financial oligarchy; the role of a market-based system; how to encourage lending; potential rules to limit systemic risk; the possibility of a financial crisis being a symptom of other problems; and insurance regulation.

4.3(f)—Fixing EPA’s Broken Integrated Risk Information System

June 11, 2009

Hearing Volume No. 111–33

Background

On Thursday, June 11, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing to examine the new Integrated Risk Information System (IRIS) process in order to make sure it functions more efficiently than past IRIS systems, which were documented to be mismanaged and ineffective, compromising public health and safety.

There were two witnesses: (1) Dr. Kevin Teichman, the Deputy Assistant Administrator for Science, Office and Research and Development, The Environmental Protection Agency and, (2) Mr. John Stephenson, Director, Natural Resources and Environment, U.S. Government Accountability Office.

Summary

In his opening statement, Chairman Brad Miller discussed the problems IRIS had in the past and the ways the new system has been improved, but wanted to make sure the new process was successful. Chairman Miller also said how important this system is in maintaining public health, stating that, “the American people need and deserve credible, scientifically sound assessments of the health
effect of chemical exposures. Ranking Member Dr. Broun (R–GA) stated that although there are commendable aspects of the new IRIS, he was still skeptical of the new process.

During the witness testimonies, Dr. Teichman discussed how the new IRIS system has improved, including its new streamlined approach to make sure that more new and updated assessments be included in the system, as well as shortening the time it takes to make chemical assessments available. Dr. Teichman highlighted a few key improvements, including the fact that the new process will be managed entirely by the EPA. He also noted that there will no longer be an opportunity for another Federal agency to prolong the process by asking for additional research to be conducted before an assessment can be produced. Third, all written comments from other Federal agencies and White House offices will become part of the public record. He ended his statement by saying that he was confidence that they can, “continue to provide critical health risk information to EPA’s programs and regions that ensure the Agency’s actions protect the public health.”

In his testimony, Mr. Stephenson stated that although the new system seems to be improved, he saw room for further streamlining. He recommended that there be no required time frames. He also did not see the purpose of the interagency consultation process, particularly the role of OMB or other White House offices in the process. Finally, Mr. Stephenson stated that there is a need for statutory deadlines for completing various activities in order to better ensure the viability of the program.

During the question and answer period, Members and panelists focused on how to ensure EPA’s control of the program, the effects of an IRIS listing, how IRIS assessments are used, and how to best build transparency into the IRIS interagency review process.

4.3(g)—Continuing Independent Assessment of the National Polar-Orbiting Operational Environmental Satellite System

June 17, 2009

Hearing Volume No. 111–36

Background

On Wednesday, June 17, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight met for its ongoing oversight of the National Polar-Orbiting Operational Environmental Satellite System (NPOESS). Without the benefits promised by NPOESS, agencies are at risk of losing the flow of global data on weather conditions and climate change that are critical to serving the needs of the United States. In five previous hearings since 2003, the Committee on Science and Technology has documented cost overruns and schedule delays threatening to cut off critical weather information. A recurring issue has been the ineffectiveness of the program’s Executive Committee (EXCOM), which consists of the heads of the three agencies involved. With evidence that the management structure is still failing to provide the leadership needed for NPOESS program success,
this hearing investigated the question: Is there hope of repairing the flaws of the organization? If not, what should replace it?

There were three witnesses: (1) Mr. David Powner, Director, Information Technology Management Issues, Government Accountability Office (GAO); (2) Mr. A. Thomas Young, Chair of the NPOESS Independent Review Team (IRT); and (3) Ms. Mary Glackin, Deputy Administrator, National Oceanic and Atmospheric Administration (NOAA).

Summary

In his opening statement, Chairman Miller discussed the long history of this system’s failure to complete and launch the NPOESS satellite series. Chairman Miller highlighted the role of NPOESS data in producing the public’s accurate weather forecasts and the contribution to understanding climate changes. Ranking Member Broun (R–GA) also stated NPOESS’s problems, including the program’s inherent complexity and program management problems. Dr. Broun ended by stating that every American is impacted by this program, whether they know it or not, and that it is the responsibility of lawmakers and agencies to make sure everyone receives accurate weather and climate information as well as put an end to waste, inefficiency and duplication wherever possible.

During the witness testimony, Mr. Powner discussed the GAO’s latest NPOESS report, which included NPOESS’s continued problems as well as GAO’s recommendations for near-term and long-term improvements. For the near-term, GAO recommended a new leadership strategy and the engaged participation of key members, as well as a plan to address potential gaps in satellite coverage. Long-term recommendations included the need for an exit strategy to separate satellite acquisitions for the next series of polar orbiting satellites.

Mr. Young discussed ten findings and recommended corrective actions in order to improve upon NPOESS’s extraordinarily low probability of success. Along with other recommendations, Mr. Young stated that the critical issue is the lack of alignment of DOD/AF and NOAA priorities, recommending that all responsibility of program decision-making and implementation be assigned to just one organization. Because NOAA would obtain the bulk of benefit from NPOESS, the IRT believed NOAA was the better choice to serve as the overall manager. However, bolstered by an experienced satellite procurement organization, either NOAA or the AF was capable of completing the program.

Ms. Glackin highlighted the steps the NOAA has taken to improve the program including installment of a government program manager at the subcontractor facility where the main imaging sensor is being developed, and enabling the program to better address the ongoing technical problems. Additionally, Ms. Glackin stated that the NOAA has been working with DOD and NASA to respond to proposed recommendations as well as with the leadership of the White House Office of Science and Technology Policy to resolve the differences that exist among the agencies.

During the question and answer period, Members and panelists focused on the problem of ensuring interagency cooperation, the role of the OSTP, the selection of a management strategy, program
cost, the coordination of agencies and technologies, and the keys to avoiding future problems. In the end, however, the Subcommittee indicated that serious consideration had to be given to following the IRT recommendation to choose a single agency if the primary bottleneck was to be untangled. This would require White House intervention.

4.3(h)—The Science of Security: Lessons Learned in Developing, Testing and Operating Advanced Radiation Monitors

June 25, 2009

Hearing Volume No. 111–38

Background

On Thursday, June 25, 2009 at 10:00 a.m., the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight, met to examine problems with the Department of Homeland Security’s (DHS) efforts to acquire its next generation of radiation portal monitors, known as Advanced Spectroscopic Portals (ASPs).

There were four witnesses: (1) Mr. Gene Aloise, Director, Natural Resources and Environment, Government Accountability Office, (2) Dr. Micah Lowenthal, Division on Earth and Life Studies, Nuclear and Radiation Studies Board, National Research Council, The National Academy of Sciences, (3) Dr. William Hagan, Acting Deputy Director, Domestic Nuclear Detection Office (DNDO), Department of Homeland Security (DHS), and (4) Mr. Todd C. Owen, Acting Deputy Assistant Commissioner, Office of Field Operations, U.S. Customs & Border Protection (CBP), Department of Homeland Security (DHS).

Summary

In his opening statement, Chairman Miller stated that preventing the detonation of a nuclear or radiological device, a dirty bomb, in the United States has become a top national security objective. He also voiced his concerns with the ASP program. Ranking Member Dr. Broun (R–GA) hoped DHS would take GAO’s recommendations seriously. He stated that DHS should, “conduct a rigorous cost-benefit analysis of the program that takes into account updated threat assessments, a review of all variations of concepts of operations, potential upgrades to existing technologies and independent cost estimates.”

During the first panel of witnesses, Mr. Aloise discussed GAO’s most recent report of ASP testing including lessons learned from such testing. In all, Mr. Aloise expressed concerns about whether the benefits of ASPs justified their high cost. Dr. Lowenthal discussed the congressionally mandated report from the National Research Council on ASPs. Dr. Lowenthal said the report recommends that DHS not proceed with further procurement of ASPs until it has addressed the findings and recommendations from the report, and until the ASP has been shown to be a favored option in the cost-benefit analysis.
The question and answer period for the first panel began with Chairman Miller asking the panel if DHS would have enough information to make a decision on the program in October. Both witnesses expressed their concern that all the necessary testing would not be complete by then. Ranking Member Broun then asked the panel to prioritize the upgrade to ASPs within the entire global nuclear detection architecture. Chairman Miller asked the panel about how the ASP project has been managed. Mr. Aloise said that the immature technology was pushed through by optimistic assumptions. Rep. Dahlkemper (D–PA) inquired about what principles should guide DHS in a cost-benefit analysis, and Mr. Aloise stated that it should be fact based judgments from test results.

During the second panel of witnesses, Dr. Hagan discussed DHS’s current development and testing of ASPs. He also discussed newly implemented steps to improve program management. One such improvement, Dr. Hagan said, has been to standardize test event planning, as well DHS-wide enhancements to program management. Dr. Hagan also said that DHS felt that the plans and procedures put in place would give the ASP program, “a strong foundation for future certification and acquisition decisions.” Mr. Owen told the Subcommittee about the current capabilities of the CBP to scan incoming materials at U.S. borders. Mr. Owen stated that, “the ASP is expected to enhance our detection capability while significantly reducing the number of secondary examinations.”

The question and answer period for the second panel began with Chairman Miller asking Dr. Hagan about why there is urgency to certify ASP. Dr. Hagan disagreed that DHS was rushing the process but said that DHS was moving as fast as it could in a thoughtful manner. Dr. Hagan also said that ASP was able to identify the source of radiation, which the current system cannot do. Ranking Member Broun asked Dr. Hagan about ASP’s abilities to detect heavily and moderately shielded radiation. Dr. Hagan responded that the current system and ASPs have limitations with high shielding but other inspection methods are used in order to attempt to identify highly shielded cargo that could pose a potential threat. The hearing closed with Rep. Dahlkemper asking Mr. Owen about the trade-offs of funding ASPs instead of adding more manpower and about the maintenance costs of the ASPs. Mr. Owen said that these issues currently need more consideration before CBP can make a decision.

4.3(i)—Providing Aviation Weather Services to the Federal Aviation Administration

July 16, 2009

Hearing Volume No. 111–43

Background

On Thursday, July 16, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing to examine the Federal Aviation Administration (FAA)’s efforts to reorganize the Aviation Weather Services provided by the National Weather Service (NWS). The FAA sought changes to im-
prove consistency in aviation weather product and services and in hopes of reducing costs. However, the justification for the proposed changes had earlier failed to convince the Committee on Science on Technology that the reorganization was warranted. This hearing intended to learn if continuing negotiations between the two agencies had produced a more desirable outcome.

There were three witnesses: (1) Mr. David Powner, Director, Information Technology Management Issues, Government Accountability Office; (2) Dr. John L (Jack) Hayes, Assistant Administrator for National Weather Service, National Oceanic and Atmospheric Administration (NOAA); and (3) Mr. Richard Day, Senior Vice President for Operations in the FAA’s Air Traffic Organization.

Summary

In his opening statement, Chairman Miller said that the FAA had regularly pressured NWSS for a plan to consolidate aviation weather services. FAA’s inability to clearly articulate the need to be satisfied made it difficult for NWS to respond appropriately. FAA’s hope to consolidate CWSU activity at a single site left many Members concerned about resulting risk. Ranking Member Paul Broun (R–GA) discussed the problematic dynamic between FAA and NWS and the need for increased coordination, stressing that this relationship has real-world implications to both commerce and airline passenger safety.

GAO reminded the Subcommittee about the results from its earlier report examining the dispute. Mr. Powner noted that the CWSUs had indeed provided inconsistent product and services to FAA, but that the Weather Service had moved forward to improve training and product design to eliminate disparities between Centers. He also recalled the lack of performance measures to ensure high quality of weather observations, and stated the multiple proposals to restructure that we were each rejected. Changes in the CWSUs would create several major challenges if their structure was, indeed, changed.

Dr. Hayes discussed the NWS’s attempts to be responsive to FAA. A revised proposal was delivered in June that refined service requirements. He promised that the NWS would work collaboratively with the FAA to ensure that the proposed structure does not degrade aviation weather services. The development of baseline performance measures was underway, and there would be extensive testing to demonstrate no loss of safety before putting the new system into daily operation.

With his testimony, Mr. Day hoped to allay the Members’ concerns and to clarify what FAA hoped for from the consolidation. FAA hoped that weather services would be available to the en route traffic control centers around the clock. Applying new technology and measuring service quality were other goals from the proposed consolidation. Day assured the Subcommittee that the current configuration would not be changed until a, “demonstration and validation show that we are able to effectively disseminate the most timely and accurate weather forecasting for the safe operation of flights in out system.”

That demonstration and validation requirement was repeatedly raised in the question and answer sessions. Mr. Powner noted that
success in this testing phase was central to assuring safety in the system after adoption of the new organization. Rep. Miller wondered about the effects of the proposed changes on staffing levels for meteorologists and how the demonstration could even be conducted without the agreement on baseline metrics between the NWS and FAA. At the end, Rep. Dahlkemper’s (D–PA) questions indicated that the question of fixing problems that did not exist was still open.

4.3(j)—The Risks of Financial Modeling: VaR and the Economic Meltdown

September 10, 2009

Hearing Volume No. 111–48

Background

On Thursday, September 10, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Science and Technology held a hearing to examine the role of risk modeling in the global financial meltdown. Risk models, and specifically a method of risk measurement known as Value-at-Risk, or VaR, are widely viewed as contributory to the extreme risk-taking by financial institutions that led to the recent economic upheaval. Relied on to guide the decisions both of financial firms in their assumption of risk and of Federal regulators in determining whether such firms held sufficient capital to support the risk they assumed, the VaR, whether it was misused or not, was involved in inducing or allowing excessive risk. The Subcommittee wished to examine the role of the VaR and related risk-measurement methods in the world financial crisis; the strengths, weaknesses, and limits of the usefulness of the VaR; the degree to which the VaR is understood, and may be manipulated, within the institutions where it is in use; and the capabilities and needs of Federal supervisors who may be called upon to work with the VaR in carrying out their regulatory duties. From a policy perspective, the most important question is how regulators will use VaR numbers produced by firms and whether these numbers provide an appropriate guide to setting capital reserve requirements. This is the second in a series of hearings on how economic thinking and methods have been used by policymakers both inside and outside of government.

Six witnesses testified in two panels. Panel one: (1) Dr. Nassim Nicholas Taleb, Distinguished Professor of Risk Engineering, Polytechnic Institute of New York University, (2) Dr. Richard Bookstaber, Financial Author. Panel two: (3) Dr. Gregg Berman, Head of Risk Business, RiskMetrics Group, (4) Dr. James G. Rickards, Senior Managing Director, Omnis Inc., (5) Mr. Christopher Whalen, Managing Director, Institutional Risk Analytics, and (6) Dr. David Colander, Christian A. Johnston Distinguished Professor of Economics, Middlebury College.

Summary

In his opening statement, Chairman Brad Miller (R–NC) addressed the problems inherent in the VaR and said that it and related risk-measurement methods needed to be evaluated. He asked:
“Can mathematics, statistics, and economics produce longer-range models—models that could give us early warning of when our complex financial system is heading for trouble?” Furthermore, Chairman Miller asked, “if models cannot be a useful guide for regulation, should we just abandon this approach and simply increase reserves, reducing profits and perhaps some useful economic conduct in the short run, but protecting taxpayers and the world economy in the long run?” In his opening statement, Ranking Member Paul Broun (R–GA) emphasized that models are tools that are meant to describe, not prescribe. He also pointed out that it is necessary to understand and appreciate the complexity of models and that understanding the limitations and intended purposes of financial models is just as important as what the models indicate.

During the first panel’s testimony, Dr. Taleb explained the VaR and pointed out the history of financial bubbles, saying: “Data shows that banks routinely lose everything earned in their past history in single blowups . . . Every time society bails them out—while bank risk-takers retain their past bonuses and start the game afresh. This is an aberrant case of capitalism for the profits and socialism for the losses.” He asserted that there are numerous significant problems associated with VaR-style risk measurement, charging that the VaR is ineffective and lacks robustness; that it encourages low-volatility, high-blowup risk taking, which can be gamed to suit the Wall Street bonus structure; and that VaR-style quantitative risk measurement is the engine behind leverage, the main cause of the current crisis. He emphasized the immediate need for “hard,” non-probabilistic measures rather than more error-prone ones.

Dr. Bookstaber also discussed what VaR is and how it can be used and misused, focusing on the limitations of VaR in measuring crisis risk. He then discussed the role of VaR in the recent market meltdown, concluding with suggestions for ways to fill in the gaps left by the limitations of VaR.

During the first panel’s question period, Members and panelists discussed whether economic events can be predicted, the overall regulation of financial products, how banks become too big to fail, Wall Street’s dependence on government bailouts, and the risks taken by different types of institutions. They also discussed incentive structures for traders, ways of holding Wall Street accountable for bonuses, malpractice in risk management, clawback provisions, credit default swaps (CDS), and whether the bailouts and stimulus package were necessary to the health of the Nation’s economy.

In the second panel’s testimony, Dr. Berman stated that the current crisis was not unpredictable, unforeseeable or unknowable, but rather was caused by the coupling of two fundamental problems: the inability of market participants to acknowledge and prepare for the consequences of long-term trends, such as a protracted downward spiral in home prices or leveraging of the credit market through the use of CDS; and the inability of market participants to recognize the exposure they had to those trends through holding asset-backed securities and other derivative contracts.

Mr. Rickards charged that the VaR is unreliable because it is based on false assumptions, which he explained in detail. He put forward policy recommendations designed to limit the scale of expo-
sure, controlling cascades and securing informational advantage. In particular, he argued, de-scaling can radically reduce risk and restore stability not only to individual institutions but to the financial system as a whole.

Mr. Whalen urged that the Members bear in mind the distinction between objective and subjective measures when discussing the use of models in finance. “Obtaining a better understanding of the role of inserting subjectivity into models is critical for distinguishing between useful deployments of modeling to manage risk and situations where models are the primary failure pathway towards creating systemic risk, and thus affect economic stability and public policy,” he said. Mr. Whalen suggested that national interests demand a higher standard of tangible proof from “outcome designers” of public policies. He added: “If financial markets and the models used to describe them are limited to those instruments that can be verified objectively, then we no longer need to fear from the ravages of Black Swans or systemic risk.”

Dr. Colander stated that the financial crisis was not due to highly technical models, but rather to the way economic models are used. He ended with two suggestions: ensure that National Science Foundation peer-review panels included representatives of a variety of approaches to economics, and increase the number of researchers trained to interpret models.

During the second period, Members and panelists discussed appropriate uses of financial models, proposals for avoiding recurrences of financial problems, abuse of the VaR, and past attempts to regulate the financial industry. Other topics included whether a government agency should test financial products for usefulness, consequences of “too big to fail,” and monitoring and analyzing hedge fund activity and risk.

4.3(k)—The Science of Security, Part II: Technical Problems Continue to Hinder Advanced Radiation Monitors

November 17, 2009

Hearing Volume No. 111–63

Background

On Tuesday, November 17, 2009, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight, held a hearing to examine continued problems with the Department of Homeland Security’s (DHS) efforts to acquire its next generation radiation monitors known as Advanced Spectroscopic Portals (ASPs). This is a follow-up to the hearing the Subcommittee held on June 25, 2009, titled: The Science of Security: Lessons Learned in Developing, Testing and Operating Advanced Radiation Monitors. Since the Domestic Nuclear Detection Office (DNDO), a DHS component, was created in 2005 they have been responsible for researching, developing, testing and managing the program. The ASP program is estimated to cost $2-to-$3 billion and has been under scrutiny since 2006 for failing to have clear-cut requirements, an adequate test plan, sufficient timelines, development
milestones or a transparent and comprehensive cost benefit analysis.

There were four witnesses: (1) Mr. Gene Aloise, Director, National Resources and Environment, Government Accountability Office (GAO), (2) Dr. Timothy M. Persons, Chief Scientist, Government Accountability Office (GAO), (3) Mr. Todd Owen, Executive Director for Cargo and Conveyance Security, U.S. Customs and Border Protection (CBP), Department of Homeland Security (DHS), (4) Dr. William Hagan, Acting Deputy Director, Domestic Nuclear Detection Office (DNDO), Department of Homeland Security (DHS).

Summary

In his opening statement, Chairman Miller pointed out the problems found with DHS’s radiation monitors, saying that the Advanced Spectroscopic Portal monitor (ASP) does not work as advertised and does not justify its cost and replacement of current generation polyvinyl toluene (PVT) radiation portal monitors. Furthermore, Chairman Miller said the Department of Energy’s approach to identifying radiation should be instructive to DHS. He ended by saying DHS still faced a long list of tests and validations before they could even speak sensibly about replacing PVTs with ASPs. In his opening statement, Ranking Member Dr. Broun (R–GA) hoped that the DNDO and CBP would be able to update the committee on how they are responding to GAO recommendations as well as what to expect from them in the future. He also stressed that many of the problems confronting the DNDO could have been prevented by engaging the end users earlier in the process.

During the witness testimonies, Mr. Aloise discussed the critical failures of ASPs including its performance histories and high numbers of false positives for the detection of high-risk nuclear material. Additionally, Mr. Aloise said that, “DNDO’s proposed solutions to these critical failures raise questions about whether the ASPs will provide any meaningful increase in the ability to detect certain nuclear materials.” Dr. Person did not give a spoken testimony since he shared one with Mr. Aloise.

Dr. Owen said that the ASPs, are “expected to enhance our detection capability while significantly reducing the number of secondary examinations,” due to its ability to distinguish between actual threats and natural or medical radiation sources that are not security threats. Additionally, he stated that, “the decision to purchase and deploy ASPs in the operational arena will be based on CBP’s mission needs and operational requirements, a comprehensive cost benefit analysis to include a full understanding of the maintenance and operational cost and analysis of alternatives and other considerations.”

Dr. Hagan stated that DNDO has conducted field tests and has worked to address all initially identified issues and is working to solve the remaining problems. In his opening statement Dr. Hagan alerted the Subcommittee and the public to the critical shortage his agency and the U.S. government at large was encountering with acquiring Helium–3, a critical non-radioactive isotope that is a key ingredient in radiation detection systems to detect neutron emitting radiation sources, such as plutonium. The shortage was so se-
vere that Dr. Hagan informed the Subcommittee, for the first time, that the Administration had halted the use of Helium–3 for radiation portal monitors, including the Advanced Spectroscopic Portals (ASPs), in September 2010. Members were troubled that neither they nor their staffs had been informed of this extremely important and far-reaching development prior to the hearing.

During the question and answer period, Members and panelists discussed CBP procedures after a primary alarm and the effect of false positives, steps taken to reduce false positives and negatives, mission critical failure, energy windowing to improve PVT performance, and the CBP inspection system. They also discussed the helium–3 shortage and potential alternative materials, what circumstances ASP’s should be deployed in, expectations of a cost-benefit analysis on ASPs, and metrics and timelines for making decisions about ASPs.

4.3(l)—Independent Audit of the National Aeronautics and Space Administration

December 3, 2009

Hearing Volume No. 111–68

Background

On Thursday, December 3, 2009, the Subcommittee on Investigations and Oversight convened a joint hearing with the Subcommittee on Space and Aeronautics for the purpose of receiving the annual independent auditor’s report on the financial status of the National Aeronautics and Space Administration (NASA). Ernst & Young, the agency's auditor, had issued a so-called "disclaimed opinion," indicating that the agency financial statements did not fairly represent NASA's accurate financial condition. Since 1990, NASA has invested significant time and effort in three attempts to develop an acceptable financial management system. While the audit report credited NASA with notable progress in correcting its weaknesses, Ernst & Young considered efforts to properly value legacy equipment on the balance sheets to fall short of government accounting standards. The hearing was called to determine what would be needed for NASA to receive unqualified opinions in subsequent annual audits.

Testifying at the hearing were: (1) Hon. Paul Martin, the newly-appointed Inspector General of NASA (accompanied by his deputy, Mr. Tom Howard); (2) Mr. Paul Murrin, Ernst & Young’s senior auditor for the NASA contract since 2004 and Partner in the company’s Assurance and Advisory Business Services; and (3) Hon. Elizabeth Robinson, NASA’s new Chief Financial Officer.

Summary

Chairman Miller (D–NC) opened the hearing by noting that while NASA’s independent auditors decided not to render an opinion on the agency’s fiscal condition in FY2009, NASA had nevertheless made significant progress since first being put on the Government Accountability Office’s (GAO’s) high-risk list seventeen years earlier. Nevertheless, this "disclaimed opinion" did not constitute a passing grade. Chairman Miller said that NASA’s failure to set an
asset value on the Shuttle and the Space Station programs was the most significant remaining problem. Ernst & Young, the independent auditors, also identified environmental liabilities which greatly concerned the Chairman. The Chairman then recognized Rep. Broun (R–GA), the Ranking Member of the Investigations and Oversight Subcommittee. Rep. Broun was pleased to observe that NASA had brought in a single-standards accounting system in place of the multiple fiefdoms present in the past.

Next, the Chairwoman of the Subcommittee on Space and Aeronautics, Rep. Giffords (D–AZ), gave a brief opening statement in which she commended the hard work of the dedicated government employees who had brought NASA so close to closing the books on the agency’s fiscal problems. Rep. Olson (R–TX), Ranking Member of the Subcommittee on Space and Aeronautics, recognized the work of former NASA CFO Ron Spechel in realizing NASA’s progress. Like previous speakers, he emphasized that NASA should not be given more funds until Congress was confident that current funds were being spent efficiently and effectively.

One of the responsibilities of an agency Inspector General is to manage the contract providing for the audit of the agency’s financial statements by an independent private firm every year. Mr. Martin’s testimony summarized the results of the Fiscal Year 2009 audit, where auditor Ernst & Young was not willing to state an opinion on whether the statements “fairly represented” the agency’s assets and liabilities. For the past two decades, NASA has struggled with financial management systems that have been unable to reliably track and report on fund management and control. This has repeatedly been highlighted by the Inspector General’s office and the Government Accountability Office as a primary management challenge for NASA.

According to Mr. Murrin, NASA was in the end unable to provide adequate and appropriate documentary evidence that the values assigned by the agency to older property, plant and equipment used in programs such as the Space Shuttle and Space Station. This has been a persistent issue highlighted by previous audit reports and the focus of continuous collaboration by NASA and Ernst & Young to correct the problems. While Mr. Murrin’s testimony described the procedural changes NASA has applied in its effort to clear this material weakness, the audit notes that these are primarily applied to current and prospective contracts. The major problem remains that the financial controls in previous years failed to preserve the required information.

It falls to Dr. Robinson to manage the corrective actions needed to eliminate the weak spots identified by the audit. In her testimony, she described the continuing efforts since 2002 aimed at bringing the upgraded financial management systems into compliance with modern standards and best practices. Identifying and correcting data discrepancies and improving staff skills have occupied much time.

In the particular item providing for the disclaimer of opinion, Dr. Robinson stated that it originated in a 1998 decision to change the accounting process for space equipment so that it was no longer fully captured in the year such equipment was obtained. NASA found that its contracting process and method failed to adapt to the
new accounting requirement and thus failed to obtain and retain the records and information needed to conform. With the failure to correct this deficiency, the gaps in records grew and led auditors to express growing discomfort about the effect on the accuracy agency financial records.

In addition to NASA’s direction to change agency practice in contracting, a new Federal accounting standard is now in place that will assist NASA—and other agencies like DOD in similar straits—to deal with the missing historical records. While significant resources have been applied to reconstruct the evidence in an attempt to satisfy the requirement for actual documentation, the new standard allows for the development of appropriate estimating methods to generate reasonable approximations of the property, plant and equipment at issue.

While displeased with the situation, Members also recognized that it resulted from poor practices over many years and that the agency was hamstrung by the bulk of missing information. Much of the discussion with the witnesses concerned the need for continuing collaboration to assure that the agency and the auditors shared a common view of the proper implementation of the new standards for estimation. Members also sought assurances that the other risks highlighted in the audit report, relating to the calculation of NASA’s environmental liabilities and the need to finish bringing the financial management systems up to legal standards, were not waiting to replace legacy asset valuation as the basis for a disclaimed opinion in the next audit. The witnesses express confidence that NASA would finally begin receiving unqualified opinions beginning with the fiscal year 2010 audit.

4.3(m)—Rare Earth Minerals and 21st Century Industry
March 16, 2010
Hearing Volume No. 111–86

Background
On Thursday, March 16, 2010, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing to examine ways of redressing the expected imbalance between available supplies of rare earth minerals and the Nation’s need for them. The hearing also asked why the policy structure put in place thirty years ago precisely to identify and respond to potential shortages of critical materials before they became acute had failed to do its job. The United States finds itself dependent on the People’s Republic of China for a commodity without which it is difficult to compete in many high-tech industries. With a near-monopoly on supplies of rare earths, the Chinese government threatens to limit exports and is trying to induce foreign manufacturing firms to locate production facilities in Inner Mongolia. The main American rare earths supplier is seeking funds to restart its mining operation, which closed in 2002, having suffered from low prices as China expanded into the market and from a late start on renewing its environmental permits in California. Additionally,
support for research on rare earths has greatly diminished in the United States.

There were five witnesses. (1) Dr. Stephen W. Freiman, President, Freiman Consulting Inc, member, National Research Council Committee on Critical Mineral Impacts on the U.S. Economy, (2) Dr. Steven Duclos, Chief Scientist and Manager, Material Sustainability, General Electric Global Research, (3) Dr. Karl Gschneidner, Anson Marston Distinguished Professor, Department of Materials Science and Engineering at Iowa State University, (4) Mr. Mark Smith, Chief Executive Officer, Molycorp Minerals, LLC, and (5) Mr. Terence Stewart, Esq., Managing Partner, Stewart and Stewart.

Summary

In his opening statement, Chairman Brad Miller (D–NC) discussed the question of how the United States might compete in attracting and retaining manufacturing firms that need access to rare earth elements in light of China's current near monopoly and its willingness to use this monopoly power to the United States' disadvantage. Chairman Miller stated the necessity of producing, recovering and recycling rare earth materials and of looking for substitutes. Full Committee Chairman Bart Gordon (D–TN), in his opening statement, recalled that in 1980 the Committee successfully put forward legislation that established a national minerals and materials policy, which in part called for support of a “vigorouls, comprehensive and coordinated program of materials research and development.” Chairman Gordon noted that this effort had fallen by the wayside, saying: “Now it is time to ask whether we need to revive a coordinated effort to level the playing field in rare earths in order to support American business and American jobs.” Ranking Member Broun (R–GA), in his opening statement, said that rare earths are “slated to play an increasingly important role as we seek to meet out future energy needs, remain competitive in the international marketplace and continue to defend our Nation.”

During the witness testimonies, Dr. Freiman outlined the supply risks for certain minerals and their implications, specifically identifying gaps in minerals information. Dr. Freiman recommended that the Federal government enhance the types of data and information it collects, disseminates and analyzes on minerals and mineral products, especially as these data and information relate to minerals whose supplies are or may become critical. He also recommended that Federal agencies develop and fund activities, including basic science and policy research, to encourage U.S. innovation in the area of critical minerals and materials to enhance understanding of global mineral availability and use.

Dr. Duclos discussed how GE manages shortages of scarce materials and commodities critical to their manufacturing operations, as well as what steps the Federal government can take to help industry minimize the risks and other issues associated with these shortages. He recommended appointing a lead agency in the government with ownership of early assessment and authority to fund solutions, including increasing the Nation's ability to monitor and assess industrial materials supply in both the short and long term.
He also recommended sustained funding for research focusing on materials substitutions, recycling technologies, development of alternative materials, new systems solutions and manufacturing efficiency.

Dr. Gschneidner discussed the history of rare earth research and, in particular, the history of the Department of Energy’s Ames Laboratory, whose achievements in research may prove helpful in the future. He argued that the best way to work through the rare-earth shortage now facing the United States would be by creating a research center where scientists, engineers and technicians would focus on innovations in high-tech areas.

Mr. Smith stated that “disruption in the global supply of rare earths poses a significant concern for America’s security and clean-energy objectives, its future defense needs, and its long-term global competitiveness.” He stressed the need to rebuild processing capacity for rare earth metals in the United States. Mr. Smith also described Molycorp’s “mining to magnets” strategy, which he touted not only for its potential to create new business but also as a catalyst for the United States’ “development of a clean-energy economy and the resurgence of domestic manufacturing.”

Mr. Stewart interpreted China’s actions in the area of rare earth minerals, saying the Chinese government is trying both to encourage foreign investors to move production of downstream products to China and to ensure low-priced supplies for sectors that China has targeted for rapid industrial growth. Mr. Smith also made recommendations for the government and private sector, including encouraging the U.S. and its trading partners to consider a second trade action against China on the range of export restraints being imposed on rare earths.

During the question period, Members and panelists discussed ways to overcome the expected imbalance between available supplies of rare earth minerals and the nation’s need for them, including: increasing exploration for domestic sources, finding new overseas suppliers, funding research to find substitute materials to reduce the amount of rare earths needed in a given produce, and increasing the recycling of rare-earth materials.

4.3(n)—Caught by Surprise: Causes and Consequences of the Helium–3 Supply Crisis

April 22, 2010

Hearing Volume No. 111–92

Background

On Thursday, April 22, 2010, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight held a hearing to examine the causes and consequences of the Helium–3 (He–3) supply crisis. He–3 is a rare, nonradioactive gas that has been produced in both the United States and Russia as a by-product of nuclear weapons development. Tritium, which helps boost the yield of nuclear weapons, decays into Helium–3 gas after approximately 12 years, but has not been produced since 1988. The result is a declining supply of He–3. However, because it was viewed as an excess commodity after the end of the Cold War, He–
3 was packaged, managed and sold at cost through Department of Energy’s Isotope Program in the Office of Nuclear Energy. (The Isotope Program was moved to the Office of Science in FY2009.) After the September 11, 2001, attack on the World Trade Center, demand for He–3 as a radiation detector exploded and consumed most of the supply. DOE's failure to manage the stockpile with an understanding of future demand, supply and needs has had negative consequences not only for security devices but for many scientific applications, including neutron scattering and cryogenics research.

In this hearing, the Subcommittee met to discuss the processes that the federal agencies are implementing to manage and set priorities for use of the limited He–3 supply and to discuss the search for alternative sources and gases.

Six witnesses on two panels testified at this hearing. Panel one: (1) Dr. William Hagan, Acting Director, Domestic Nuclear Detention Office (DNDO), Department of Homeland Security (DHS), (2) Dr. William Brinkman, Director of the Office of Science, Department of Energy (DOE), accompanied by Dr. Steven Aoki, Deputy Undersecretary of Energy Counterterrorism and Member of the White House He–3 Interagency Policy Committee (IPC) Steering Committee). Panel two: (3) Mr. Tom Anderson, Product Manager, Reuter-Stokes Radiation Measurement Solutions, GE Energy, (4) Mr. Richard L. Arsenault, Director of Health, Safety and Security and Environment, ThruBit LLC, (5) Dr. William Halperin, John Evans Professor of Physics, Department of Physics, Northwestern University, (6) Dr. Jason Woods, Assistant Professor, Radiology, Mallinckrodt Institute of Radiology, Biomedical MR Laboratory, Washington University in St. Louis and Program Director, Hyperpolarized Media MR Study Group, International Society for Magnetic Resonance in Medicine (ISMRM).

Summary

In his opening statement, Chairman Miller stated that the impacts of the He–3 shortage are real and painful. Furthermore, because of its unique physical properties, He–3 plays a crucial role in oil and gas exploration, cryogenics, quantum computing, neutron scattering facilities and medical lung imaging research. Over the past year, Chairman Miller said, the cost of obtaining helium–3 had risen from $200 per liter to more than $2,000 per liter. He said that it matters that if DOE had noticed the disconnect between growing demand and declining supply, it could have managed that stockpile with clear prioritization for highest use and led an aggressive and timely search for alternatives to helium–3. The Chairman ended by noting that the Subcommittee was not as prepared for the hearing as they should have been due to the failure of the White House and certain agencies to produce documents, or explain why they could not, when asked by the Subcommittee. Ranking Member Paul Broun (R–GA), in his opening statement, expressed his disappointment in the state of our He–3 supply and at the tendency to act only after a crisis has emerged. He said he hoped that the agencies would assist the Committee in meeting its oversight responsibilities in a more cooperative fashion and expressed his commitment to work with the Chairman to ensure that the
Federal Government does a better job of predicting and mitigating these supply shortages.

In the first panel, Dr. Hagan discussed how DNDO became aware of the shortage of He–3 and how they have responded to it. He also highlighted that DNDO had reduced the number of portal monitors using He–3 under the Advanced Spectroscopic Portal (ASP) program, the impact of the shortage of DNDO’s radiological and nuclear detection programs, and finally, the status of their work in identifying alternative technologies to replace He–3 as a neutron detector. Dr. Brinkman discussed the role of DOE in He–3 production and distribution, its realization of, and response to, the He–3 shortage, the impact of the He–3 shortage, potential alternative sources, and the current actions and allocation process.

During the first panel’s question and answer period, Members and panelists discussed the failure of the DOE to recognize and address the He–3 supply and how to keep an inventory of isotopes to avoid another shortage. Other topics included shifting the United States away from being the world’s primary supplier of He–3, funding for the development of He–3 alternatives and yearly demand of He–3. They also discussed the possibility of extracting He–3 from the moon and making He–3 through other means.

In the second panel, Mr. Anderson spoke about the impact the He–3 shortage has had on GE Energy’s business and customers. He said that a drop-in replacement technology for He–3 did not exist at this time and as many as six different neutron detection technologies may be required to best address the various performance requirements for different applications. Mr. Anderson also said that significant research was required immediately to develop new neutron detection technologies, and that Federal funding was essential in accelerating such development. He also spoke about GE’s ideas to manage the problem in the future. Mr. Arsenault spoke about how the He–3 shortage has impacted his and other companies in need of neutron detectors. Specifically, the high cost and low availability of He–3 makes it hard for his small company to bring new technologies to the market. Furthermore, he said, the shortage of He–3 is starting to impact the entire oil and gas industry—an industry that is a vital part of national security and energy independence.

Dr. Halperin described how the shortage of He–3 has negatively impacted scientific research. He said that he relies heavily on He–3 to carry out scientific research at low temperatures, which is essential for studying certain properties of materials such as superconductivity and magnetism and for developing various advanced materials. Low temperature research, Dr. Halperin said, is also critical for future improvements in metrology and high-speed computation, including quantum information technology. Dr. Woods discussed how the shortage has impacted his field of He–3 MRIs. He said that He–3 MRI has illuminated pulmonary ventilation and microstructure. Its physical properties make it unique and irreplaceable in many instances. Dr. Woods also explained He–3’s potential for guiding interventions in drug development and how developing technology to recycle 2,000 liters of He–3 annually could allow for significant and sustained research into the future.
During the second panel’s question and answer period, Members and panelists discussed the DOE’s failure to communicate He–3 supply shortages and the lack of substitutes for cryogenics. Other topics included the development of He–3 alternatives and their viability, the need for Federal research and development, and recycling He–3.

4.3(o)—Preventing Harm—Protecting Health: Reforming CDC’s Environmental Public Health Practices

May 20, 2010

Hearing Volume No. 111–95

Background

On Thursday, May 20, 2010, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight, met to examine the policies and procedures used by the National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) of the Centers of Disease Control and Prevention (CDC) to assess, validate and release public health documents and to detail specific instances where these offices have relied upon flawed science and incomplete data to draw critical public health conclusions. Resolving these policy and procedural issues within ATSDR and ensuring that the CDC’s public health documents in general rely upon sound scientific data to reach public health conclusions is essential to ensuring the health and safety of the public. The purpose of this hearing was to help lay down a new road map for CDC in helping to reform its environmental public health practices, largely carried out by NCEH/ATSDR. This was the third hearing the Subcommittee held in the past two years to examine the performance of ATSDR.

Five witnesses testified on two panels. Panel one: (1) Ms. Cynthia A. Bascetta, Director, Public Health and Medical Services, Government Accountability Office (GAO), (2) Mr. Stephen Lester, Science Director, Center for Health, Environment & Justice (CHEJ), (3) Dr. John Wargo, Professor of Environmental Risk Analysis, Yale University, (4) Dr. Marc Edwards, Charles P. Lunsford Professor, Department of Civil and Environmental Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia. Panel two: (5) Dr. Robin M. Ikeda, MD, MPH, Deputy Director of the Office of Noncommunicable Diseases, Injury and Environmental Health and Acting Director for the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (CDC).

Summary

During his opening statement, Chairman Brad Miller stated that in order for ATSDR and NCEH to succeed, they must no longer analyze data that is incomplete, inaccurate, or irrelevant to the underlying question without disclosing the known limits of the data. Also, the Chairman said ATSDR must no longer respond to critics by attacking their knowledge or their motives. They have failed, said the Chairman, to have rigorous and consistent reviews of study design, data collection and quality and analytical methods
and conclusions. ATSDR, according to the Chairman, also failed to have consistent policies and procedures for conducting public health research, interventions, and publications. The Chairman said that although much of ATSDR’s and NCEH’s problem is a failure to communicate, there is also substantial evidence that their quality of science is not as consistent as it should be. Ranking Member Dr. Paul Broun (R–GA), in his opening statement, discussed ATSDR’s history of problems and said that despite the complexity and difficulty of the agency’s work, the public deserves to have an agency that they trust, and hoped the hearing would help shed light not only on how the agency can better protect public health and safety, but also how it can adapt to its evolving mission.

During the first panel of witness testimonies, Ms. Bascetta discussed GAO’s April 2010 ATSDR report. She said that GAO found that ATSDR’s policies and procedures were deficient in the three phases of preparation of public health products: (1) initiation, which includes a decision by the agency to begin work on a public health product and the assignment of staff to prepare the product; (2) development, which includes management approval to proceed with the development of a product and the actual drafting of the public health product; and (3) review and clearance, which is the process by which a product is internally or externally reviewed and disseminated as a final public health product. Mr. Lester, in his testimony, said that ATSDR has failed to act on the Center for Health, Environment, and Justice’s (CHEJ) recommendations to fix ATSDR’s inadequate and inappropriate methods of assessing health problems, which have kept communities from getting the information, assistance, and medical treatment they need to protect themselves and their children from chemical exposures.

Dr. Wargo discussed his experience with ATSDR, saying the agency’s assessments of contamination on the island of Vieques contained serious flaws. He said that the central problem is cultural in that the agency has misperceived its intended mission. Specifically, Dr. Wargo said, ATSDR sees their mission as the need to prove danger when it should instead demonstrate a reasonable certainty of no harm. Dr. Edwards discussed his experience related to the 2001–2004 D.C. lead-in-water crisis, saying CDC published a flawed assessment and refused to correct the scientific record after the fact, which lead to misinformation and false conclusions. He ended his testimony by saying that he has found there to be a “culture of scientific corruption in branches of this important agency and there is no evidence it has the capability for self-correction.”

During the first panel’s question and answer period, Members and panelists discussed how to fix these agencies, how President Obama’s cancer panel addressed the risk of environmentally caused cancer versus other causes, and the failure of the CDC to communicate negative health effects of lead poisoning from elevated lead levels during the DC lead-in-water crisis. Other topics included ATSDR’s reactions to criticism and recommendations, the residents of Vieques, the flaws in the CDC’s 2004 cross-sectional study regarding the DC lead-in-water crisis, and the need for peer-review of ATSDR’s critical public health documents.
During the second panel of witnesses, Dr. Ikeda discussed the improvements underway within NCEH and ATSDR, the National Conversion, CDC's work on elevated lead in water in Washington D.C.'s drinking water and the environmental public health issues on the island of Vieques. Dr. Ikeda described the various steps CDC is taking to make its work more consistent internally and the agency's reanalysis of the DC lead-in-water crisis. Dr. Ikeda claimed that CDC's more comprehensive analysis did not fundamentally change their 2004 findings. ATSDR also re-evaluated its past studies regarding Vieques, said Dr. Ikeda, and is in the final stages of completing a report that will be peer-reviewed.

During the second panel's question and answer period, Members and panelists discussed how ATSDR can move forward, how to correct the record on lead-in-water in DC after CDC published a misleading publication in 2004, and how CDC can ensure that it receives appropriate samples and data to adequately characterize exposure and risk in the future. Other topics included how to communicate results better, how to implement a peer-review process for CDC, the environmental public health issues on the island of Vieques, and what CDC can do for families in Washington, D.C. whose children have been identified as having lead poisoning that may be due to having been exposed to elevated water lead levels in their drinking water.

4.3(p)—Setting New Courses for Polar Weather Satellites and Earth Observations

June 29, 2010

Hearing Volume No. 111–102

Background

On Tuesday, June 29, 2010, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight convened to receive testimony on the Administration’s proposal to restructure the National Polar-Orbiting Operational Environmental Satellite System (NPOESS). After months of analysis following the President’s inauguration, the Office of Science and Technology Policy concluded that returning to the state before 1993, where the Department of Defense (DOD) and the National Oceanic and Atmospheric Administration (NOAA) each designed, procured and operated satellites intended to support their own primary requirements, would be the best chance for avoiding gaps in weather and climate data acquisition and the threat of interrupted military and civilian forecasting.

The Subcommittee also invited the Government Accountability Office (GAO) to critique the Administration decision, based on its ongoing assessment of the NPOESS program. GAO was able to incorporate comments based on its report to the Subcommittee discussing a national strategy for Earth observations and restoration of capabilities removed from NPOESS at the time of its previous restructuring in 2005.

Five witnesses provided testimony: (1) Hon. Shere Abbott, Associate Director, Energy and Environment Division, Office of Science and Technology Policy (OSTP); (2) Ms. Mary Glackin, Deputy
Under Secretary for Oceans and Atmosphere and NOAA deputy administrator; (3) Mr. Christopher Scolese, Associate Administrator, National Aeronautics and Space Administration (NASA); (4) Mr. Gil Klinger, Director, Space and Intelligence Office, Assistant Secretary of Defense for Acquisition, DoD; and (5) Mr. David Powner, Director, Information Technology Management Issues, GAO.

Summary

In his opening statement, Chairman Miller outlined the history of difficulties and problems NPOESS has had, saying that “we have spent almost $6 billion already on the NPOESS program . . . there is not a single completed satellite to show for the time and money.” He said that he hoped its new management would solve what has long ailed the NPOESS program. Ranking Member Paul Broun (R–GA), in his opening statement, described the plethora of problems NPOESS has had in the past and questioned the course of the new program since little is known about it.

Having directed the OSTP assessment team that recommended splitting the program, Ms. Abbott discussed the process and the findings that led to the decision. She said that despite a “vision of coordination and efficiency and in spite of multiple attempts to improve its execution, the program has consistently been behind schedule, over budget and underperforming.” OSTP’s task force concluded that significant change needed to be made to the management structure, matching those of the program Independent Review Team.

Ms. Glackin discussed NOAA’s expanded responsibilities with the new Joint Polar Satellite System (JPSS). Its revamped program would draw on the progress that had been made with the NPOESS Preparatory Program satellite to provide the follow-on satellites in time to avoid gaps in observational coverage. NOAA would continue, as it does now, to operate both satellite constellations and the ground system delivering the data to NOAA and DOD forecasting centers. She said that although the transition might take time, NOAA believes it is the right step for the United States in its need for uninterrupted, reliable weather and climate data from space.

NASA’s role in the new JPSS matches more closely its traditional role as NOAA’s technical arm. According to Mr. Scolese, NASA’s role in the restructured program will follow the model of the successful Polar Operational Environmental Satellite and Geostationary Operational Environmental Satellite program. In keeping with the IRT recommendations, NASA’s earth satellite management expertise at the Goddard Space Flight Center will be made available to the JPSS program. NASA will also assume leadership of the instrument development programs.

Having regained responsibility for managing satellites and operations in the morning orbit, Mr. Klinger indicated that DOD, in cooperation with NOAA/NASA, is completing an analysis for fulfilling the morning orbit requirements, which will serve as the basis for DOD’s portion the restructured program. In its initial planning, Klinger indicated that DOD expects to have its first Defense Weather Satellite System spacecraft in orbit by 2018, and the De-
partment intends to adapt existing NPOESS designs and technology to the extent it can.

Mr. Powner provided a more skeptical outlook on the likelihood that NOAA and DOD would easily transition to their separate acquisitions. Even with the changes, both agencies would still find it necessary to cooperate on data sharing. Mr. Powner’s primary message to the Subcommittee was that “...until an interagency strategy for each earth observation is established, and a clear process of implanting it is in place, federal agencies will continue to procure their immediate priorities on an ad hoc basis, the economic benefits of a coordinated approach to investments in earth observation may be lost, and the continuity of key measurements may be lost.” GAO also recommended that OSTP accelerate efforts to construct the national strategy for earth observations to help in guiding decisions on the satellite and ground networks now central to our understanding of environmental change around the globe.

During the question and answer period, Members sought more detailed information on the changes underway after OSTP’s decision, particularly in the DOD program. Ms. Glackin provided assurances that the United States would continue to host search-and-rescue transponders in orbit, even if it was not aboard the JPSS or DWSS spacecraft. Even with the choice to disentangle the two agencies, the witnesses continued to caution the Members that serious risks remain to completing the restructured program and constant attention to cost and schedule issues will be needed.

4.3(q)—Building a Science of Economics for the Real World

July 20, 2010

Hearing Volume No. 111–106

Background

On Thursday, July 20, 2010, the Honorable Brad Miller (D–NC) presiding, the Subcommittee on Investigations and Oversight met to examine the promise and limits of modern macroeconomic theory in light of the current economic crisis. The Subcommittee had previously looked at how the global financial meltdown of 2008 may have been caused or abetted by financial risk models, many of which are rooted in the same assumptions upon which today’s mainstream macroeconomic models are based. But the insights of economics, a field that aspires to be a science and for which the National Science Foundation (NSF) is the major funding resource in the Federal government, shape far more than what takes place on Wall Street. Economic analysis is used to inform virtually every aspect of domestic policy. If the generally accepted economic models inclined the Nation’s policy makers to dismiss the notion that a crisis was possible, and then led them toward measures that may have been less than optimal in addressing it, it seems appropriate to ask why the economics profession cannot provide better policy guidance. Further, in an effort to improve the quality of economic science, should the Federal government consider supporting new avenues of research through the NSF?
Five witnesses testified. (1) Dr. Robert M. Solow, Professor Emeritus, Department of Economics, MIT; (2) Dr. Sidney G. Winter, Deloitte and Touche Professor Emeritus of Management, the Wharton School of the University of Pennsylvania; (3) Dr. Scott E. Page, Lenoid Hurwicz Collegiate Professor of Complex Systems, Political Science, and Economics, University of Michigan; (4) Dr. V.V. Chari, Paul W. Frenzel Land Grant Professor of Liberal Arts, University of Minnesota; (5) Dr. David C. Colander, Christian A. Johnson Distinguished Professor of Economics, Middlebury College.

Summary

In his opening statement, Chairman Brad Miller noted that the macroeconomic model known as the Dynamic Stochastic General Equilibrium model (DSGE), which underpins a view of the economy that former Federal Reserve Board Chairman Allen Greenspan admitted to be flawed, is still in favor today, both in academia and at the world’s central banks. The Chairman explained that this model, designed as a theorist’s tool, is now a significant factor in many critical policy decisions, with questionable results. The Chairman put forward the questions of whether any existing economic models have the potential to help the Nation find its way out of the current recession and whether the Federal government should use its funding of economic science to encourage the development of alternative models, since the reigning models have performed so poorly. Ranking Member Paul Broun (R–GA), in his opening statement, stressed that “despite the attempts of many to develop a scientific panacea for informing economic decisions, models are only a tool employed by decision makers and economists.”

During the witness testimonies, Dr. Solow discussed why the approach to economics that dominates many elite universities and central banks and has great influence in other policy circles cannot solve the problems the United States faces. Dr. Solow explained that this approach does not offer any guidance or insight, and is in any case intrinsically bound to fail because it is based on false assumptions. He emphasized, however, that although there are huge gaps in our understanding of the economy and some models have proven to be flawed, that does not mean that macroeconomics as a whole should be discarded or discredited. Instead, Dr. Solow said, the economics profession must identify and get rid of models that do not fundamentally make sense, such as the DSGE, and look for alternatives that prove to be useful for practical ends, such as informing policy that would counter the recession.

Dr. Winter, also discussing the shortcomings of the DSGE model, focused on the realities of economic life that are missing from it. Although all models simplify reality in a way that tells the truth while not aspiring to tell the whole truth, Dr. Winter said, DSGE is an extreme example of the tendency to analyze hyper-stylized versions of economic problems, thereby denying or suppressing observable and verifiable realities. Dr. Winter continued by discussing the important pieces missing from the model, how to integrate those missing aspects, and finally, the need to extend the quest for policy advice beyond models and their improvement.

Dr. Page argued for the benefits of using a variety of models when trying to understand a complex system such as the economy.
Complex-systems models, he said, have a particular ability to generate insights into complex phenomena, offering the pace of innovation and market crashes as examples. Dr. Page stressed that while single models are useful in predicting physical phenomena accurately, they are less capable of predicting economic outcomes because an economy, as a complex system, is made up of diverse parts that interact and behave in unpredictable ways. Dr. Page called upon economists to "widen our lens and use a crowd of models to predict bounds and the likely fluctuations in the economy and to anticipate unintended consequences and riskiness of policy decisions . . . ."

Dr. Chari described the various DSGE models that exist and how they have been modified to take into account more factors than previous DSGE models. He also discussed why the DSGE models failed to see the crisis coming, explaining that a lack of historical data and a disregard for experiences of other countries on the part of modelers had narrowed the scope of possible outcomes. Dr. Chari also said that government funding for economics research is a great investment in the Nation’s future, as it will decrease the probability of another financial crisis.

Dr. Colander stated that two structural changes must be implemented in the NSF program funding economics research in order to change the incentives that now promote economists’ basing concrete policy advice on abstract formal models. First, diversity in the reviewer pool should be an explicit goal for NSF grants in the social sciences. This change, said Dr. Colander, would encourage more creative work and provide more commonsense feedback from the real world. Dr. Colander’s second recommendation is to increase the number of researchers trained in relating models to the real world, as opposed to just constructing models, which, he said, could help reduce the likelihood of financial meltdowns in the future.

During the question period, Members and panelists discussed whether and how policy choices by government can be captured by DSGE model, as well as the importance of not relying too heavily on one model or one set of models and the role of scientific and technological development in U.S. growth. Other topics included the economic effect of extending unemployment benefits, how to use the DSGE model from now on and how policy advice based on it should be regarded, and the characteristics and merits of alternative models. Members and panelists ended by discussing new areas of economics research and the direction of government-funded economics research.

4.3(r)—Camp Lejeune: Contamination and Compensation, Looking Back, Moving Forward

September 16, 2010

Hearing Volume No. 111–108

Background

On Thursday, September 16, 2010, the Honorable Brad Miller presiding (D–NC), the Subcommittee Investigations and Oversight, met to examine the toxic legacy of drinking water contamination at
Marine Corps Base Camp Lejeune in North Carolina. The hearing examined the Department of the Navy and U.S. Marine Corps' knowledge of past contamination at Camp Lejeune, as well as prior and current analyses by the Agency for Toxic Substances and Disease Registry (ATSDR), a sister agency of the Centers for Disease Control and Prevention (CDC), regarding toxic exposures at Camp Lejeune. The hearing also reviewed current cooperative efforts by the U.S. Navy and ATSDR concerning the identification and access to records required to complete these studies. In addition, the hearing examined the process by which veterans have been compensated for illnesses due to environmental exposures at Camp Lejeune and what steps the Department of Veterans Affairs (VA) and U.S. Navy were currently taking to ensure that Camp Lejeune veterans and their dependents are quickly and appropriately compensated for any illnesses or health issues related to toxic exposures while serving at the Camp Lejeune Marine Corps Base.

Eight witnesses testified on two panels. Panel one was comprised of: (1) Dr. Richard Clapp, Professor Emeritus, Department of Environmental Health, Boston University School of Public Health, environmental health policy consultant and member of the ATSDR Camp Lejeune Community Assistance Panel (CAP); (2) Mr. Mike Partain, Member ATSDR Camp Lejeune Community Assistance Panel (CAP) and breast cancer survivor born on Camp Lejeune; (3) Mr. Peter Devereaux, Former Marine Corps Corporal and Camp Lejeune veteran diagnosed with breast cancer; (4) Mr. Jim Watters, Director, Graduate Medical Education, Texas Tech University Health Sciences Center, former Navy Lieutenant, retired Commander, Navy Reserve, Medical Service Corps and Camp Lejeune veteran diagnosed with kidney cancer; (5) Mr. Michael Hargett, General Director, Anchimeric Associates and former co-owner of Grainer Laboratories; Panel 2: (6) Dr. Chris Portier, Director, Agency for Toxic Substances and Disease Registry (ATSDR); (7) Mr. Thomas J. Pamperin, Associate Deputy Under Secretary for Policy and Program Management, Veterans Benefits Administration, U.S. Department of Veterans Affairs; (8) Major General Eugene G. Payne Jr. Assistant Deputy Commandant for Installations and Logistics (Facilities), Headquarters, United States Marine Corps.

Summary

In his opening statement, Chairman Brad Miller stated that as many as one million Marines and their families training and living on the base at Camp Lejeune were exposed to toxic chemicals in their drinking water, including solvents such as trichloroethylene (TCE) and perchloroethylene (PCE) and by-products of fuel such as benzene. He continued by saying, “We will never be certain about all the adverse health consequences that come from consuming that toxic cocktail, but we can be certain that some Marines and some dependents will develop cancers that will shorten their lives. We are certain that the Marine Corps failed to close the wells promptly when they were informed of the presence of TCE and PCE in their water. Instead, they provided that water to their people for two more years.” The Chairman also discussed the failure of the Navy and Marine Corps to admit and respond to their mistakes. He also
discussed ATSDR's 1997 inadequate Public Health Assessment of human health hazards posed by Camp Lejeune's drinking water supply that it withdrew in 2009, primarily because it failed to address benzene contamination on the base. Ranking Member Paul Broun (R–GA), in his opening statement, expressed the sacred duty the United States government has to take care of its troops. Dr. Broun also said that although he is pleased that ATSDR is taking steps to further investigate this matter, and the VA is working to ensure that Veterans and their families are taken care of, this issue simply will not go away and needs to be adequately addressed. Furthermore, Dr. Broun said that protecting our service members and their families in return for their dedication and service is the least we can do.

During the first panel, Dr. Clapp discussed the input he provided to the National Research Council (NRC) committee, in the form of a peer review, on the issue of Camp Lejeune's drinking water. Dr. Clapp said, “The degree of contamination of drinking water at Camp Lejeune in the years between 1957 and 1985 is the highest I have observed in my career as an environmental epidemiologist.” He also said that water modeling, based on chemical exposures, makes it possible to examine the patterns of mortality from a wide range of cancers and reproductive outcomes and childhood cancer. Dr. Clapp also outlined steps the Department of Veterans Affairs can take to address the effects of contamination.

Mr. Partain provided a detailed account of the water contamination at Camp Lejeune. He brought forward a multitude of evidence documenting the Navy and Marine Corps' neglect on the issue and showed how the Marine Corps' statements do not match historical documents. He called for Congress to act on this issue since the Navy and Marine Corps are not helping the Marines, Sailors, their family members, and base employees sickened by the fouled water at Camp Lejeune, despite well documented evidence of water contamination.

Mr. Devereaux discussed how his incurable metastatic breast cancer has impacted his life and his family and the disease's connection to the contaminated water he drank at Camp Lejeune. He also discussed his experience fighting for support from the VA, saying that although he finally received full disability, many others are not as lucky.

Mr. Watters discussed how his cancer, renal cell carcinoma, has impacted his life as well as his discovery, long after his diagnoses, that the Marine Corps and Navy knew of Camp Lejeune's water contamination and its connection to health problems such as cancer, but did not offer help. Mr. Watters also discussed his fight to obtain a disabilities claim with VA. Additionally, he said, “It is my firm belief that the U.S. Marine Corps and Department of the Navy leadership have abandoned and betrayed their wounded from Camp Lejeune, including women and children, and left them to suffer and die.”

Mr. Hargett discussed his experience working with the Navy and Marine Corps to test Camp Lejeune's water, and the fact that when contamination was found, leadership did not seem to do much about it. There is no question, Mr. Hargett said, that military personnel, dependents, and base personnel were exposed to the hazard
and that corrections were eventually accomplished, but the poor interest from the Deputy Utilities manager lead him to believe that the corrective actions were slow.

During the first panel's question and answer period, Members and panelists discussed the inconsistency between the Marine Corps statements about Camp Lejeune and scientific data. Members and panelists also discussed the appeals process for obtaining benefits through the VA, the rarity of male breast cancer in the general population as opposed to the population from Camp Lejeune, and the documented diseases associated with exposure to PCE, TCE and benzene.

During the second panel of witness testimonies, Dr. Portier provided background on ATSDR's health assessments on Camp Lejeune and the primary drinking water contaminants at Camp Lejeune. Dr. Portier also discussed ATSDR's current activities concerning Camp Lejeune, describing its work on water modeling as a way to provide the best possible estimates on the levels of chemical exposures for different populations.

Mr. Pamperin discussed what the VA has done to determine whether studies, such as the one done by the NRC, provided a sufficient scientific basis for determining whether the population of Camp Lejeune has, in fact, “suffered adverse health effects as a result of exposure to contaminants in the water supply.” Mr. Pamperin also discussed the VA's claim process, and ended by saying that the VA awards benefits to Veterans who have demonstrated that they are suffering due to adverse exposures at Camp Lejeune, but there is not, in their eyes, sufficient evidence to justify all claims for Camp Lejeune Veterans.

Major General Payne opened his testimony by stating that the welfare of Marines and their family members as well as civilian employees has always been of paramount importance to the Marine Corps and Navy. Major General Payne discussed his knowledge of past water contamination at Camp Lejeune, saying that at the time, in the 1980s, there were inconsistent findings concerning the water's chemical contamination. He also said that there were no drinking water regulations in place banning the existence of TCE or PCE at the time of their discovery. He outlined the steps they took to investigate contamination and to notify those who were exposed to contaminants, well as their cooperation with ATSDR and other health initiatives. He ended by saying, “currently, scientific studies haven't determined reliably whether diseases and disorders experienced by former residents and workers at Camp Lejeune are associated with their exposure to contaminants in the water supply because of shortcomings and methodological limitations.” Both Dr. Clapp and Dr. Portier, however, pointed out that there is a wide body of valid scientific studies that have determined public health harm from exposure to the same chemicals discovered in the drinking water supplies at Camp Lejeune.

During the second panel’s question and answer period, Members and panelists discussed the influence of lawyers on the second panel’s testimonies and the apparent discrepancies in Major General Payne’s and Mr. Pamperin’s testimonies and supporting documents. They also discussed how the conclusions reached by the NAS report compare to the evidence gathered and reported by
ATSDR over the last 20 years. They ended by discussing the VA claims process and its fairness, as well as the lack of urgency on behalf of the Marine Corps and Navy to address the problem of toxic contaminants in the drinking water supplies at Camp Lejeune when they were first discovered.
Background

On February 26, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to explore the potential for informal STEM learning to engage students in math and science in ways that traditional formal learning environments cannot, as well as the ways in which informal STEM education can complement and enhance classroom STEM studies. Furthermore, the Subcommittee received testimony on the National Academies report entitled, "Learning Science in Informal Environments: People, Places, and Pursuits."

There were five witnesses: (1) Dr. Joan Ferrini-Mundy, Division Director, Division of Research on Learning in Formal and Informal Settings, Education and Human Resources Directorate, National Science Foundation; (2) Dr. Phillip Bell, Professor, College of Education, the University of Washington, Seattle; (3) Ms. Andrea Ingram, Vice President of Education and Guest Experiences, Museum of Science and Industry-Chicago; (4) Mr. Robert Lippincott, Senior Vice President for Education, the Public Broadcasting Service; and (5) Dr. Alejandro Grajal, Senior Vice President of Conservation, Education, and Training, the Chicago Zoological Society.

Summary

Chairman Lipinski opened the hearing by describing the wide variety of educational activities that can take place outside of the traditional classroom, and highlighted the role informal education can play in promoting student interest and participation in the STEM fields, particularly for individuals from groups historically underrepresented in STEM. Ranking Member Ehlers (R–MI) echoed Chairman Lipinski’s sentiment that informal educators are uniquely positioned to engage students and the general public. Mr. Ehlers also noted that there are unique challenges to assessing and evaluating the effectiveness of informal STEM education.

During the witness testimony, Dr. Ferrini-Mundy described the National Science Foundation’s investment in informal STEM education programming and research. In his testimony, Dr. Bell described the findings and recommendations of the National Academies report entitled, “Learning Science in Informal Environments: People, Places, and Pursuits.” Dr. Bell also highlighted the re-
search and activities of the Learning in Informal and Formal Environments Center, or LIFE Center, an NSF-funded collaboration of the University of Washington, Stanford University, and SRI International. In her testimony, Ms. Ingram described the Museum of Science and Industry’s activities to promote STEM learning, specifically through the museum’s Center for the Advancement of Science Education whose programming reaches both the general public as well as students on school organized field trips, and the Institute for Quality Science Teaching which partners with local schools and universities to improve teacher training. Dr. Lippincott described STEM educational programming offered by PBS, and the role of digital and electronic media in exciting youth about the STEM fields. Dr. Grajal described the activities of the Chicago Zoo, specifically highlighting their extensive teacher training programs and their partnerships with the Chicago Public School System.

During the discussion period, Members and witnesses focused on: the need for improved coordination of informal and formal STEM education activities and the importance of partnerships between informal and formal educators, challenges to assessing STEM learning in informal environments and barriers to developing better metrics for evaluating the effectiveness of informal STEM education, and the challenge of reaching students and teachers from areas with limited access to traditional informal learning environments such as museums or zoos.

4.4(b)—Coordination of International Science Partnerships

March 24, 2009

Hearing Volume No. 111–14

Background

On Tuesday, March 24, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to receive testimony on draft legislation to recreate a committee under the National Science and Technology Council for the coordination and planning of international science and technology activities and partnerships between and among Federal research agencies and the Department of State.

There were four witnesses: (1) Dr. Jon C. Strauss, Chairman of the National Science Board Task Force on International Science; (2) Dr. Norman P. Neureiter, Director of the Center for Science, Technology and Security Policy, American Association for the Advancement of Science; (3) Mr. Anthony “Bud” Rock, Vice President for Global Engagement at Arizona State University; and (4) Dr. Gerald Hane, Managing Director, Q–Paradigm.

Summary

In his opening statement, Chairman Lipinski discussed the importance of international cooperation in science and technology (S&T) and the history of mechanisms for interagency coordination of international S&T activities. He then stated that the purpose of the hearing was to receive comments on the potential purpose, uniqueness, and efficacy of an interagency coordinating committee.
for international S&T as described in the proposed legislation. Ranking Member Ehlers (R–MI) agreed on the importance of international S&T cooperation and of interagency cooperation on this topic and stated that he supported the goals of the draft legislation.

During the witness testimony, Dr. Strauss elaborated on the recommendations in the National Science Board report on international science and engineering partnerships, including the recommendation for an interagency committee that served as the basis for the proposed legislation. Dr. Neureiter stated that he supported the proposed legislation and offered some specific recommendations about its role. He also recommended that the legislation go further by helping to create a dedicated fund for high priority S&T cooperation. Mr. Rock stated that an interagency coordinating committee should first and foremost be assigned the lead responsibility to define the international dimensions of cross-cutting national research priorities, that is, research and development areas that require coordinated investment across multiple agencies. Dr. Hane was unable to appear at the hearing due to unforeseeable travel delays.

During the question and answer period, the Members and panelists focused on the specific recommendations for how the interagency committee proposed in the draft legislation should and should not function, for example who should chair, what the priorities of the committee should be, and how its role must be unique from other interagency committees and individual agencies. Members also asked panelists about other recommendations for strengthening international S&T cooperation, including recommendations to specific agencies such as the National Science Foundation and the U.S. Agency for International Development. Panelists also discussed how partnerships are initially formed between foreign science ministers and organizations and U.S. counterparts, but they suggested that the interagency committee is not an appropriate point of contact.

4.4(c)—Cyber Security R&D

June 10, 2009

Hearing Volume No. 111–31

Background

On Tuesday, June 10, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science held a hearing to explore the state of federal cybersecurity research and development and the adequacy of cybersecurity education and workforce training programs.

There were five witnesses: (1) Dr. Seymour Goodman, Professor of International Affairs and Computing and Co-Director, Georgia Tech Information Security Center, Georgia Institute of Technology; (2) Ms. Liesyl Franz, Vice President, Information Security and Global Public Policy, TechAmerica; (3) Dr. Anita D’Amico, Director, Secure Decisions Division, Applied Visions, Inc.; (4) Dr. Fred Schneider, Samuel B. Eckert Professor of Computer Science, Department of Computer Science, Cornell University; and (5) Mr.
Summary

In his opening statement, Chairman Lipinski discussed the benefits of information technology, but also the vulnerability of our networks to cyber attacks. He cited the rising cost of cyber crimes to the federal government, businesses and individuals, and emphasized the role of cybersecurity R&D and education in improving the security of cyberspace. Ranking Member Ehlers (R–MI) expressed the importance of improving cybersecurity for both the Federal Government and the private sector and the need to foster trust and information exchange between the public and private sector in the pursuit of common goals.

During the witness testimony, Dr. Goodman discussed the need for technical advancements in cybersecurity, but stressed that advancements in non-technical areas such as human behavior, policy, and economics are also critical. Ms. Franz spoke about the importance of increasing public-private collaborations and the role of the private sector in cybersecurity. She recommended the establishment of a formal mechanism for industry input into the federal cybersecurity R&D portfolio. Dr. D'Amico discussed the role of the social sciences in cybersecurity, and how the Federal Government should foster collaborations between computer scientists and social scientists in order to increase system security and usability. Dr. Schneider spoke about increasing long-term investments in cybersecurity R&D and expressed concern that currently funded research is reactive rather than visionary. Mr. Brown testified about the value of moving scientific advancements from the laboratory to the marketplace.

During the question and answer period, Members and panelists focused on the need for cybersecurity professionals to receive a multidisciplinary education, including in technical and non-technical areas, the need to design security into hardware and software from the beginning, risks in the supply chain, and research needed to detect component modifications. The question and answer period also included a discussion of incentives to improve the adoption of cybersecurity measures, increasing consumer understanding of cybersecurity risks, and ways to increase technology transfer and foster university-industry research partnerships.
search Projects Agency (DARPA) to the findings and recommenda-
tions in the Administration’s 60-day Cyberspace Policy Review.

There were four witnesses: (1) Ms. Cita Furlani, Director, Infor-
mation Technology Laboratory, NIST; (2) Dr. Jeannette Wing, As-
Assistant Director, Directorate for Computer & Information Science &
Engineering, NSF; (3) Dr. Robert F. Leheny, Acting Director,
DARPA; and (4) Dr. Peter Fonash, Acting Deputy Assistant Sec-
retary, Office of Cyber Security Communications, DHS.

Summary

In his opening statement, Chairman Wu cited his displeasure
with the effectiveness of previous government-funded cybersecurity
efforts and their levels of success. Chairman Wu stated that this
hearing would highlight the progress of the four Federal agencies
tasked with bolstering and maintaining federal cybersecurity
standards and what steps are being taken for future improvements.
Ranking Member Smith cited both the previous and current Ad-
ministration’s commitment to the issue of cybersecurity and said
that, while there exists a consensus for a strong bipartisan commit-
ment to bolstering cybersecurity both domestically and abroad,
the country is still at the earliest stages of doing so and that Congress
must balance the haste to find solutions with careful deliberation
on the solutions they choose. He wondered if enough effort is being
placed on cybersecurity research and development efforts, whether
$30 billion dollars is an appropriate amount to invest in cybersecu-
rity, and how we can improve the security of private sector net-
works as well as public domains. Chairman Lipinski stressed the
need for more information sharing between the public and private
sectors and the challenges of incentivizing agencies to better ad-
dress the problems of cybersecurity, as well as deficiencies in the
information technology education field. He called for a change in
the culture of how Americans practice their computer hygiene and
for the formation of a secure and resilient cyberspace for not only
the Federal Government, but the private sector as well.

Ms. Furlani said that NIST accelerates the development and de-
ployment of information and communication systems that are reli-
able, usable, interoperable, and secure. She asserted that NIST is
actively engaged with private industry, academia, non-national se-
curity federal departments and agencies, the intelligence commu-
nity, and other elements of the law enforcement and national secu-

Dr. Wing said that many cyber security measures deployed today
capitalize on fundamental research outcomes generated decades
ago. NSF agrees with the recent 60-Day Cyberspace Policy Review
that a national strategy to secure cyberspace in both the near- and
the long-term must include investments in fundamental, unclassi-
fied, open, long-term research. Many of the cyberspace security
methods used today were developed by the open research commu-
nity, many with an application in mind other than security.

Dr. Leheny talked about DARPA’s role in cybersecurity research
and advancement, and specifically mentioned one program, which
develops a National Cyber Range. This range will be a vehicle for
significantly advancing progress in cyber understanding and capabilities, serving as a tool for rapid, realistic, and quantitative simulation assessment of cyber technologies. He also talked about coordinating research with other agencies, noting that—in general—program managers engage with their counterparts in other agencies to scope out the best way forward to achieve a specific research goal.

Mr. Fonash said that DHS leads a multi-agency approach to coordinate the security of federal, civil, and executive branch networks. He said that the United States Computer Emergency Readiness Team (US–CERT) serves as the focal point for the security of federal civil executive branch networks. Agencies report instances to US–CERT, which then provides guidance to agencies on enhancing detection capabilities and works with them to mitigate information security incidents. DHS has also led the Comprehensive Cybersecurity Initiative (CNCI) effort to establish a front-line defense for the federal executive branch. DHS also has plans to deploy EINSTEIN, an intrusion detection system. He said that DHS works with industry and government partners to secure the Nation’s critical infrastructure networks.

4.4(e)—Encouraging the Participation of Female Students in STEM Fields

July 21, 2009

Hearing Volume No. 111–45

Background

On July 21, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine current research findings, best practices, and the role of the federal agencies in increasing the interest of girls in science, technology, engineering, and mathematics (STEM) in primary and secondary school, and addressing the challenges that deter young women from pursuing post-secondary STEM degrees.

There were five witnesses: (1) Dr. Alan I. Leshner, Chief Executive Officer, American Association for the Advancement of Science (AAAS); (2) Dr. Marcia Brumit Kropf, Chief Operating Officer, Girls Incorporated; (3) Dr. Sandra Hanson, Professor of Sociology, Catholic University; (4) Ms. Barbara Bogue, Associate Professor of Engineering Science and Mechanics and Women in Engineering, Penn State College of Engineering; and (5) Ms. Cheryl Thomas, President, Ardmore Associates LLC.

Summary

Chairman Lipinski opened the hearing by describing the disproportionately low number of women earning undergraduate degrees in certain STEM fields such as engineering, computer science, and physics. He stressed that broadening the STEM pipeline is critical to our Nation’s economic competitiveness. Ranking Member Ehlers (R–MI) echoed Chairman Lipinski’s sentiment, also citing statistics that demonstrate the disparities in the participation of women in STEM.
During the witness testimony, Dr. Leshner discussed some of the efforts of AAAS to increase the participation of women in the STEM fields. He spoke about the challenges women face in the scientific workforce and stressed that even among women who do attain STEM degrees, many leave careers in science because of work environments and institutional cultures that do not support them and their needs related to balancing work and family life. Dr. Kropf suggested that a major constraint for women is the often perpetuated stereotype regarding gender and the STEM fields, mainly that men are innately better at STEM and are better suited for careers in STEM. She also stressed the unique role informal learning can play in attracting women to STEM. Dr. Hanson described her own research, which suggests that young girls do not start out with low achievement in STEM, rather they begin to lose interest at many points along the pipeline, often due to a lack of support and encouragement. She echoed Dr. Kropf's claim regarding stereotypes, arguing that textbooks need to have more pictures of women scientists. She also stressed the importance of looking at the intersection of gender and race when examining barriers to increasing the participation of underrepresented groups in STEM. Dr. Bogue discussed the need for improved assessments and evaluation techniques in order to better determine effective mechanisms to recruit and retain women in the STEM fields. Dr. Thomas stressed the negative impact of stereotypes, asserting that girls are often deterred from pursuing STEM studies because generally they are thought of as being reserved for men. She discussed the need for girls to have strong, positive, female role models in the STEM fields.

During the discussion period, Members and witnesses focused on: the importance of positive role models and mentors for girls, the need to provide schools with better resources to encourage young girls, the role of informal and hands-on learning to encourage interest and participation of underrepresented groups in STEM, and the role sports and other out-of-school activities can play in increasing the confidence of young girls and thus their willingness to pursue studies and career tracks historically thought of as reserved for men.

4.4(f)—A Systems Approach to Improving K–12 STEM Education

July 30, 2009

Hearing Volume No. 111–47

Background

On July 30, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine how the many public and private stakeholders in an urban K–12 system can work together to improve science, technology, engineering and mathematics (STEM) education inside and outside of the classroom.

There were five witnesses: (1) Dr. Wanda Ward, Acting Assistant Director, Directorate for Education and Human Resources, National Science Foundation (NSF); (2) Ms. Maggie Daley, Chair,
After School Matters; (3) Mr. Michael Lach, Officer of Teaching and Learning, Chicago Public Schools; (4) Dr. Donald Wink, Director of Undergraduate Studies, Department of Chemistry, and Director of Graduate Studies, Learning Sciences Research Institute, University of Illinois at Chicago; and (5) Ms. Katherine Pickus, Divisional Vice President, Global Citizenship and Policy, Abbott.

Summary

Chairman Lipinski opened the hearing by discussing the need for more students to participate in education in the STEM fields. He stated that there will be a wave of Americans retiring from these fields and students in this country need to enroll more frequently if the U.S. is to continue to lead in the global economy. Ranking Member Ehlers (R–MI) noted that the hearing would help Members develop a greater appreciation of the particular challenges facing large urban school districts in their efforts to implement STEM education programs.

During the witness testimony, Dr. Ward stated that the NSF vision is aligned with STEM priorities in the America COMPETES Act and the American Recovery and Reinvestment Act. She also stated that it is important to utilize technology to enhance learning. Ms. Daley talked about the importance of informal education and hands on learning. She noted that students in her program have higher graduation rates, lower dropout rates, and fewer course failures, and mentioned the need for government support of programs such as hers. Mr. Lach discussed the challenges and economic constraints facing the public school system in Illinois, and introduced key strategies to address these challenges. He also stressed the importance of partnerships between universities, businesses, museums, and laboratories. Dr. Wink discussed the importance of improving instruction and engaging students and STEM experts simultaneously. Ms. Pickus stated that it is essential to create a culture in which there is more interest in science. She also emphasized the importance of partnerships between programs with proven records and educational institutions.

During the discussion period, Members and witnesses focused on: the need to keep principals and administrators engaged and to make sure they have high expectations for both teachers and students to show proficiency in STEM content, the need to put accountability tools and supports in place to help poor minority students achieve, the importance of effective training for teachers, the challenges facing rural districts and the need to use computers for distance learning, the importance of partnerships among university science and education faculty, public schools, and other STEM institutions such as museums, the salary differences between urban and suburban school districts and the effects of the differential on science and math education, and whether it would be beneficial for the city of Chicago and other cities if the mayor was dedicated and gathered decision makers together.
Background

On Thursday, October 8, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine mechanisms for funding high-risk, potentially high-reward research, and the appropriate role of the federal government in supporting such research.

There were four witnesses: (1) Dr. Neal F. Lane, Malcolm Gillis University Professor and Senior Fellow, James A. Baker III Institute for Public Policy, Rice University; (2) Dr. James P. Collins, Assistant Director for Biological Sciences, National Science Foundation (NSF); (3) Dr. Richard D. McCullough, Professor of Chemistry and Vice President of Research, Carnegie Mellon University; and (4) Dr. Gerald M. Rubin, Vice President and Director, Janelia Farm Research Campus, Howard Hughes Medical Institute.

Summary

In his opening statement, Chairman Lipinski stated his concern that the peer-review system has become too conservative in its funding decisions, expressed the Subcommittee's intention to address high-risk, high-reward research during the reauthorization of the America COMPETES Act, and indicated his interest in hearing about appropriate mechanisms to support such research. Ranking Member Ehlers (R–MI) emphasized the importance of addressing transformative research within the basic research portfolio.

During the witness testimony, Dr. Lane described recommendations for NSF from the American Academy of Arts and Sciences' report on high-risk, high-reward research, including the establishment of a targeted program to support high-risk research, the development of metrics to evaluate the success of the program, and the creation of other policies and mechanisms to support high-risk research. Dr. Collins testified that NSF is currently exploring methods and measures to understand the contributions of high-risk research and to inform future investments. Dr. McCullough indicated that the current peer-review system is not conducive to high-risk research and offered a number of recommendations, including the establishment of a specific program for high-risk research, and the development of special review panels to evaluate high-risk research proposals. Dr. Rubin described the way in which the Howard Hughes Medical Institute supports cutting-edge research and the premise of their investigator program which is “people not projects.”

During the question and answer period, Members and panelists focused on the need for a diversity of funding mechanisms to support high-risk research, including the seed funding, prizes, and support for individuals over specific projects. Members and panelists also discussed the need to change the culture of review panels
and the reward criteria at institutions of higher education in order to encourage more high-risk research.

4.4(h)—Engineering in K–12 Education

October 22, 2009

Hearing Volume No. 111–57

Background

On October 22, 2009, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the potential benefits of, challenges to, and current models for incorporating engineering education at the K–12 level.

There were five witnesses: (1) Dr. Linda Katehi, Chair, National Academy of Engineering Committee on K–12 Engineering Education, and Chancellor, University of California, Davis; (2) Dr. Thomas Peterson, Assistant Director for Engineering, National Science Foundation (NSF); (3) Dr. Ioannis Miaoulis, President and Director, Museum of Science, Boston and Founder, National Center for Technological Literacy; (4) Dr. Darryll Pines, Dean and Nariman Farvardin Professor of Engineering, A. James Clark School of Engineering, University of Maryland, College Park; and (5) Mr. Rick Sandlin, Principal, Martha and Josh Morriss Mathematics and Engineering Elementary School, Texarkana, Texas.

Summary

Chairman Lipinski opened the hearing by describing the growing effort to develop effective models for teaching engineering education at the K–12 level, and expressed his interest in learning how the integration of engineering concepts in K–12 math and science teaching could be used to improve student achievement in all STEM fields. Ranking Member Ehlers (R–MI) noted the unique and important role engineering could play in elementary and secondary education, while stressing the importance of building a strong research base regarding the teaching and learning of engineering in the K–12 classroom.

During the witness testimony, Dr. Katehi described the findings and recommendations of the National Academy of Engineering study, entitled “Engineering in K–12 Education.” Specifically, she emphasized the benefits of an integrated approach to STEM education, the need to improve professional development opportunities in engineering education for K–12 teachers, and the role engineering education can play in increasing participation of individuals from underrepresented groups in STEM. Dr. Peterson described investments made by the National Science Foundation in K–12 engineering education and research. Dr. Miaoulis described the Museum of Science Boston’s activities to promote engineering literacy, specifically, the development of engineering curriculum for elementary students, the offering of teacher professional development opportunities, and the development of university curricula to train future teachers in engineering education principles. Dr. Pines described outreach efforts, including student summer programs and teacher professional development activities, supported by the Uni-
versity of Maryland, School of Engineering. Mr. Sandlin described the students’ experience and the curriculum offered at the Martha and Josh Morriss Mathematics and Engineering Elementary School.

During the discussion period, Members and witnesses focused on: the relationship between engineering education and technological literacy, NSF’s investments in K–12 engineering education and coordination of the programs being managed by NSF’s Engineering Directorate and the Education and Human Resources Directorate, activities to increase student engagement and recruitment into engineering, and professional development for K–12 teachers.

4.4(i)—Strengthening Undergraduate and Graduate STEM Education

February 4, 2010

Hearing Volume No. 111–76

Background

On Thursday, February 4, 2010, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the current state of science, technology, engineering and math (STEM) education in undergraduate and graduate institutions. In particular, in preparation for the Committee’s reauthorization of the America COMPETES Act, the hearing focused on the role of the National Science Foundation (NSF) in strengthening STEM education at U.S. colleges and universities.

There were five witnesses: (1) Dr. Joan Ferrini-Mundy, Acting Assistant Director for Education and Human Resources at the National Science Foundation; (2) Mr. Rick Stephens, Senior Vice President for Resources and Administration at the Boeing Company, and Chair of the Aerospace Industries Association’s (AIA) Workforce Steering Committee; (3) Dr. Noah Finkelstein, Associate Professor of Physics at the University of Colorado at Boulder; (4) Dr. Karen Klomparens, Associate Provost and Dean for Graduate Education at Michigan State University; and (5) Dr. Robert Mathieu, Professor and Chair of Astronomy and Director of the Center for the Integration of Research, Technology and Learning (CIRTL) at the University of Wisconsin at Madison.

Summary

In his opening statement, Chairman Lipinski discussed the significant increase in foreign investment in the STEM fields, arguing that the U.S. needs to increase its own investment in STEM education in order to keep up with the global pace of competition and innovation. Ranking Member Ehlers (R–MI) similarly noted the importance of investing in STEM education, and he expressed concern that the fiscal year 2011 NSF budget did not include funding increases for university-based programs supporting the training of STEM teachers.

During the witness testimony, Dr. Ferrini-Mundy discussed NSF’s mission as it relates to education, and described a number of the Foundation’s programs specifically designed to help strength-
en STEM education. Mr. Stephens discussed the skills shortage in the aging science and technology workforce, noting that defense contractors are particularly limited because they often can only employ U.S. citizens. He also discussed the negative portrayal of scientists and engineers in the media, and described AIA’s efforts to combat these stereotypes.

Dr. Finkelstein argued that higher education is the “critical lynchpin” of the STEM education system, and noted that despite knowing what needs to be done, successful models of teaching and learning are not widespread in the STEM community; scientists and educators are not applying scientific methods to the problem of fixing STEM education itself. Dr. Klomparens discussed the challenge of recruiting students to the STEM fields, and recommended establishing better connections between K–12, undergraduate and graduate institutions. Dr. Mathieu focused on inadequate teacher preparation and attrition as two of the major barriers to a STEM-qualified workforce.

During the question and answer period, Members and panelists focused on metrics for and evaluations of NSF’s education initiatives, the chasm between schools of education and science communities, the need for institutional support and structure in order to scale up successful programs, the effectiveness of using NSF CAREER awards and modified incentive structures to encourage better teaching practices, the characteristics of engineering schools which produce the most effective workers, and the use of media to change perceptions of the STEM fields.

4.4(j)—The State of Research Infrastructure at U.S. Universities

February 23, 2010

Hearing Volume No. 111–77

Background

On Tuesday, February 23, 2010, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the research and research training infrastructure of our universities and colleges, including research facilities, and cyberinfrastructure capabilities, the capacity of the research infrastructure to meet the needs of U.S. scientists and engineers now and in the future, and the appropriate role of the Federal government in sustaining such infrastructure.

There were four witnesses: (1) Dr. Leslie Tolbert, Vice President for Research for the Graduate Studies and Economic Development at the University of Arizona; (2) Mr. Albert Horvath, Senior Vice President for Finance and Business at Pennsylvania State University; (3) Dr. John R. Raymond, Vice President for Academic Affairs and Provost at the Medical University of South Carolina, and Chair of the State of South Carolina EPSCoR Committee; and (4) Dr. Thom Dunning, Director of the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign.
**Summary**

In his opening statement, Chairman Lipinski noted the importance of maintaining and modernizing research infrastructure to ensure that federal research funding can be used efficiently and on the most cutting-edge research. He asked that the witnesses comment on how federal dollars should be balanced between infrastructure needs and direct research costs. Ranking Member Ehlers expressed concern about the need to improve academic research infrastructure, but also noted that the National Science Foundation’s expertise and mission is in funding peer-reviewed basic research and suggested that NSF might not be an appropriate venue for infrastructure funding.

During the witness testimony, Dr. Tolbert noted that increased mandates and reporting requirements, specifically for research compliance, are increasingly consuming the “facilities and administration” reimbursements that have been traditionally used to offset infrastructure costs. She also noted, as a representative from a state university, that state funding for new buildings and building maintenance is very low, and commended federal programs such as the Academic Research Infrastructure program and the Major Research Instrumentation and Major Research Equipment and Facilities Construction programs for helping to cover these expenses. Mr. Horvath noted that from a financial management perspective, major infrastructure investments are particularly complicated and expensive to establish and maintain, and that recent uncertainty about funding and the consequences of the economic downturn have made it even more difficult to fund new infrastructure and to continue servicing debt on previous projects.

Dr. Raymond discussed South Carolina’s Experimental Program to Stimulate Competitive Research (EPSCoR) grants from NSF and NASA and the effect these grants have had on the state’s research infrastructure and capacity. He also suggested improvements to that program, including dividing it into research, education, and workforce components, increasing funding, and adding new funds for maintenance of existing research facilities as well. Dr. Dunning focused specifically on cyberinfrastructure needs as related to high-performance computing, including the need for increased user support at universities, his concern about too-frequent competitions for supercomputing contracts, balance between software and hardware needs, and networks and their limited data capacities.

During the question and answer period, Members and panelists focused on the infrastructure maintenance deficit, the United States’ competitiveness in supercomputing relative to other countries, American students’ declining interest in computer science fields, state and industry support for higher education investments, linking research investments to regional economic goals, collaboration between federal agencies on research funding, how infrastructure affects universities’ ability to compete with other American universities or with foreign universities for top faculty and graduate students, productivity loss due to infrastructure needs, administrative burdens on research grant recipients, how EPSCoR could help smaller universities, community colleges, technical colleges and minority-serving institutions, and the effect of the *American Recovery and Reinvestment Act* on infrastructure demands.
4.4(k)—The National Science Foundation’s FY 2011 Budget Request

March 10, 2010

Hearing Volume No. 111–83

Background

On Wednesday, March 10, 2010, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the priorities in the National Science Foundation’s FY 2011 budget request. In addition, in preparation for reauthorization of the 2007 America COMPETES Act, the Subcommittee examined core activities, initiatives, and policy directions for research, infrastructure, education and workforce training at the Foundation.

There were two witnesses: (1) Dr. Arden Bement, Director of the National Science Foundation (NSF); and (2) Dr. Steven Beering, Chair of the National Science Board (NSB).

Summary

In his opening statement, Chairman Lipinski expressed his support for the overall increase in the NSF budget, but also expressed concern about the lack of increase or, in some cases, the decrease in funding in specific areas—namely the Education and Human Resources Directorate, research infrastructure funding, and the National Nanotechnology Initiative budget. Ranking Member Ehlers (R–MI) also expressed concern regarding funding for education programs at NSF, especially for the Math and Science Partnerships program and the Noyce program.

During the witness testimony, Dr. Bement noted that the 8 percent increase in the overall budget keeps the Foundation on track to double its budget, as recommended in the America COMPETES Act. He also said that the main driver for the budget was the National Innovation Strategy, and went on to summarize specific programs and areas of the budget that reflect the Administration’s priorities with respect to innovation and STEM education. Dr. Beering discussed the implications of the National Science Board’s recently issued biannual statistical report, Science and Engineering Indicators 2010, and encouraged Congress to fund in full the President’s NSF budget request.

During the question and answer period, the Members and panelists discussed a number of issues, including science diplomacy, NSF’s role in federal STEM initiatives and in partnering with the Department of Education, the budget for the Engineering and Human Resources directorate, energy independence, scientific integrity, NSF’s proposed consolidation of Broadening Participation programs, research commercialization, research infrastructure, Recovery Act spending, and transformative research.
4.4(l)—Broadening Participation in STEM
March 16, 2010
Hearing Volume No. 111–85

Background

On Tuesday, March 16, 2010, the Honorable Marcia Fudge (D–OH) presiding, the Subcommittee on Research and Science Education held a hearing to examine institutional and cultural barriers to broadening the participation of students from underrepresented groups pursuing degrees in science, technology, engineering, and mathematics (STEM), efforts to overcome these barriers at both mainstream and minority serving institutions, and the role that Federal agencies can play in supporting these efforts.

There were five witnesses: (1) Dr. Shirley M. Malcom, Head of the Directorate for Education and Human Resources Programs, American Association for the Advancement of Science, (2) Dr. Alicia C. Dowd, Associate Professor of Higher Education, University of Southern California, (3) Dr. Keivan Stassun, Associate Professor of Physics & Astronomy, Vanderbilt University, (4) Dr. David Yarlott, President of Little Big Horn College, and (5) Ms. Elaine Craft, Director of the South Carolina Advanced Technological Education National Resource Center, Florence-Darlington Technical College.

Summary

In her opening statement, Vice Chairwoman Fudge stated the need to produce more scientists and engineers, in addition to creating a more STEM-literate workforce in order to fill the growing number of technical jobs. She further emphasized the need to develop all of the STEM talent the nation has to offer, including by increasing the number of underrepresented minority students pursuing STEM degrees, to meet the workforce demands. Ranking Member Ehlers (R–MI) suggested that while some progress had been made in attracting and retaining underrepresented minorities in STEM, the overall numbers are still discouraging and that he was interested in learning how the Federal government could leverage successful programs. Ms. Fudge and Mr. Ehlers both expressed interest in hearing the panelists’ opinion on the National Science Foundation’s proposal to consolidate a number of broadening participation programs.

During the witness testimony, Dr. Malcom outlined the data trends for the participation of women, minorities, and persons with disabilities in STEM and expressed the need to improve federal coordination of broadening participation efforts. Malcom also stated that in addition to diversifying the student population, we need to focus on increasing the number of individuals from underrepresented groups within STEM faculty. Dr. Dowd described the role of community colleges in improving the participation of Hispanic students in STEM, and the importance of institutional change in increasing STEM diversity. Dr. Stassun described the partnership between Fisk University and Vanderbilt University to transition students from Fisk’s STEM master’s degree programs to Vanderbilt’s Ph.D. degree programs. Stassun outlined the key
strategies of the successful program, which included recruiting minority students with unrealized potential, strong mentorship, and dedicated faculty. Dr. Yarlott described the importance of the National Science Foundation’s Tribal Colleges and Universities Program (TCUP) as well as the unique challenges faced by tribal colleges and the communities they serve. He offered several recommendations on how to modify TCUP and other NSF-funded programs to better serve tribal colleges. Ms. Craft described the central role community colleges have to play in broadening the participation of underrepresented minorities in STEM. She emphasized the need to improve STEM teaching and the opportunity that exists to integrate STEM topics into remedial courses that most community colleges students need to take prior to pursuing a STEM degree.

During the question and answer period, the Members and panelists focused on the importance of diversifying the STEM faculty to provide role models for minority students, the negative impact the lack of financial support has on a student’s decision to pursue a STEM degree, the need to improve teaching strategies and methodologies, the importance of easing the transfer of students from community colleges to 4-year institutions, and the need to provide incentives such as a broader impacts review criterion at all Federal science agencies in order to encourage faculty and institutions of higher education to focus on broadening participation efforts.

4.4(m)—From the Lab Bench to the Marketplace: Improving Technology Transfer

June 10, 2010

Hearing Volume No. 111–99

Background

On Thursday, June 10, 2010, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the process by which knowledge and technology are transferred from academic researchers to the private sector, and to identify best practices, policies, and other activities that can facilitate the commercialization of federally funded research for the benefit of society and the economic competitiveness of the United States.

There were six witnesses: (1) Dr. Thomas W. Peterson, Assistant Director of the Directorate for Engineering at the National Science Foundation; (2) Ms. Lesa Mitchell, Vice President of Advancing Innovation at the Ewing Marion Kauffman Foundation; (3) Mr. W. Mark Crowell, Executive Director and Associate Vice President for Innovation Partnerships and Commercialization at the University of Virginia; (4) Mr. Wayne Watkins, Associate Vice President for Research at the University of Akron; (5) Mr. Keith L. Crandell, Co-founder and Managing Director at ARCH Venture Partners; and (6) Mr. Neil D. Kane, President and Co-founder of Advanced Diamond Technologies, Inc.
Summary

In his opening statement, Chairman Lipinski discussed the need to turn discoveries at the academic level into economically productive products, companies and jobs, especially in light of increasing technological competition from other countries. Ranking Member Ehlers (R–MI) emphasized his desire to learn about partnerships between universities, industry, and the National Science Foundation.

During the witness testimony, Dr. Peterson described NSF’s role in supporting translational research, and focused on NSF’s Engineering Research Centers, the Industry/University Cooperative Research Centers, and NSF’s Small Business Innovation Research and Small Business Tech Transfer programs as examples of ways in which NSF has been able to successfully support technology transfer and commercialization of new technologies in academia. Ms. Mitchell called for an increase in transparency of federally funded research, for funding agencies to become more involved in the technology transfer process, and for an increase in funding for proof-of-concept centers and commercialization education programs. Mr. Crowell noted the change in the technology transfer sector from being largely reactive in the 1980s and 1990s to being highly sophisticated and driven by best practices today, especially in concentrated areas of entrepreneurial activity.

Mr. Watkins focused on the need for university administrations to demonstrate commitment to innovation and technology transfer, the need for tech transfer offices to be flexible and adaptable, the appropriate roles that government can play in the innovation process, and on the need for universities, industry, and government to collaborate effectively in the technology transfer process. Mr. Crandell, drawing from his experience as a venture capitalist, discussed the importance of commercialization metrics, the need to focus added funding on the top one percent of scientists, a realistic standard of conduct that relies on actual conflict of interest and not the appearance of such, encouragement of exclusive licenses, and his desire for investor-backed companies to qualify for SBIR grants. Lastly, Mr. Kane focused on the barriers that he has encountered in attempting technology transfers from universities and federal labs, including transaction costs of executing licenses, problems with conflicts of interest or visas for foreign nationals wanting to work in the United States, and the so-called “valley of death,” or the gap between applied research and commercial traction.

During the question and answer period, Members and panelists discussed whether inventors or technology transfer offices should control patent licensing, if the United States has an advantage in industrial innovation and startup companies, whether the link between research and commercialization is an appropriate funding venue for the National Science Foundation, given that its focus is on basic research, how to alter the academic landscape or tenure structure to reward innovation and entrepreneurship as well as traditional research publishing, potential changes in visa policies to accommodate research and technology transfer needs, how promising university-industry relationships are identified, and how NSF might facilitate those interactions, the STAR METRICS initiative, and the qualities of an effective technology transfer office.
Background

On Tuesday, July 21, 2010, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the future of the biological sciences, including research occurring at the intersection of the physical sciences, engineering, and biological sciences, and to examine the potential these emerging fields of interdisciplinary research hold for addressing grand challenges in energy, the environment, agriculture, materials, and manufacturing.

There were five witnesses: (1) Dr. Keith Yamamoto, Chair of the National Academy of Sciences and Board on Life Sciences and Professor for the Department of Cellular and Molecular Pharmacology at the University of California in San Francisco; (2) Dr. James Collins, Virginia M. Ullman Professor of Natural History and the Environment at the Department of Ecology, Evolution & Environmental Science at Arizona State University; (3) Dr. Reinhard Laubenbacher, Professor of the Virginia Bioinformatics Institute and Department of Mathematics at Virginia Tech; (4) Dr. Joshua N. Leonard, Assistant Professor at the Department of Chemical and Biological Engineering at Northwestern University; and (5) Dr. Karl Sanford, Vice President of Technology Development at Genencor.

Summary

In his opening statement, Chairman Lipinski expressed excitement about the potential of the “new biology” field, as well as his desire to learn more about the possibility of finding critical solutions to real-world problems at the intersection of biology and other fields, including the physical sciences, engineering, and mathematics. He also asked the witnesses for recommendations on how the National Science Foundation can foster interdisciplinary research and improve STEM education for students interested in these interdisciplinary fields. Ranking Member Ehlers (R–MI) discussed the emerging trend of using interdisciplinary research to solve problems, and expressed concern that graduate students receiving interdisciplinary training might end up with an overly broad scientific background rather than developing disciplinary expertise.

During the witness testimony, Dr. Yamamoto focused on the findings and recommendations of a National Research Council report, *A New Biology for the 21st Century*, which found that the field suffers from lack of recognition and inadequate support. He also noted the report committee’s recommendation that life scientists and physical scientists should be collaborating on research to address grand challenges in four areas: food, energy, the environment, and health. Dr. Collins discussed the need for institutions to be innovative and adaptable when dealing with interdisciplinary research, stating the need to lower “barriers that block the ready
flow of knowledge and ideas between, for example, academic departments, funding agencies, or the public and private sector.” Dr. Laubenbacher spoke about the role of mathematics in new biology, the importance of interdisciplinary collaborations and cross-agency coordination and the need for the Federal Government to support such initiatives. Dr. Laubenbacher also discussed workforce training including, interdisciplinary Ph.D. programs, integrated curricula and research experiences at the undergraduate level, faculty development opportunities, and inspiring future scientists.

Dr. Leonard discussed the emerging field of synthetic biology and the importance of funding high-risk, high-reward projects in the field. Dr. Sanford stated that the future of biological research is in the “Golden Triangle” of information technology, biotechnology, and nanotechnology; each field has enormous potential in its own right, but would be further empowered if they collaborated to address society’s challenges. He also stressed the importance of continued investment in research, education, business, and legal developments, transparency, and data-based decision making.

During the question and answer period, Members and panelists focused on the role of the National Science Foundation in fostering interdisciplinary research, how to train future interdisciplinary scientists, the position of the United States relative to other countries in the field of synthetic biology, how to ensure that the private sector is engaged in this field and in bringing federally-sponsored research discoveries to the marketplace, and how the current regulatory guidelines apply to synthetic versus natural genomics.

4.4(o)—Behind the Scenes: Science and Education at the Smithsonian Institution

July 21, 2010

Hearing Volume No. 111–107

Background

On Wednesday, July 21, 2010, the Honorable Daniel Lipinski (D-IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the Smithsonian Institution’s research activities, educational programs, and management of scientific collections, as well as the intersection between those missions.

There were four witnesses: (1) Dr. G. Wayne Clough, Secretary of the Smithsonian Institution; (2) Ms. Claudine Brown, Director of Education at the Smithsonian Institution; (3) Dr. Eldredge “Biff” Bermingham, Director of the Smithsonian Tropical Research Institute; and (4) Ms. Shari Werb, Assistant Director of Education at the National Museum of Natural History.

Summary

In his opening statement, Chairman Lipinski noted the need for Congress to take a more active role in oversight of the Smithsonian Institution (SI) given that the majority of its budget comes from federal appropriations, and the importance of the Institution's research and education activities. He also expressed interest in learning more about the Smithsonian’s coordination with other federal...
agencies and SI’s efforts to improve management and sharing of scientific collections. Ranking Member Ehlers (R–MI) discussed his own history with the Smithsonian as the former Chairman of the House Administration Committee, and argued that the Institution plays a unique role in federal science and education activities.

During the witness testimony, Secretary Clough gave an overview of how the Smithsonian’s activities are uniquely diverse and distinctive relative to other science and education entities, highlighting the ability of SI to conduct long-term studies and its possession of some of the largest scientific collections in the world. He also discussed the two ‘Grand Challenges’ in the Smithsonian’s strategic plan that specifically relate to science. Ms. Brown explained her role as the first-ever Director of Education, in which she will coordinate the 32 museum and research center education offices and help to disseminate the curricula and digital teaching tools developed by the Smithsonian. Dr. Bermingham spoke about the research projects at the Smithsonian Tropical Research Institute in Panama, or STRI, which is unique in its field because its data dates back for nearly a century’s worth of collections, as STRI is not tied to the traditional grant-making schedule as universities and other research centers often are. Ms. Werb focused on museum-level education and outreach activities, including exposure to research and mentor programs.

During the question and answer period, Members and panelists discussed science diplomacy and the Smithsonian’s international presence, the Smithsonian’s infrastructure backlog and funding shortages, the need for Congress and the Federal Government to recognize the Smithsonian as a research institution rather than as a network of museums, and to fund it accordingly, the value of the Smithsonian as an educational resource, non-governmental revenue sources, the ‘service’ component of Smithsonian research versus traditional university research, fellowship programs at SI, and collaboration with national labs.

4.4(p)—The Science of Science and Innovation Policy

September 23, 2010

Hearing Volume No. 111–109

Background

On Thursday, September 23, 2010, the Honorable Daniel Lipinski (D–IL) presiding, the Subcommittee on Research and Science Education held a hearing to examine the current state of science and technology policy research, how this research informs policy-making, and the role of the federal government in fostering academic research and education in this emerging interdisciplinary field.

There were four witnesses: (1) Dr. Julia Lane, Program Director of the Science and Science and Innovation Policy program at the National Science Foundation (NSF); (2) Dr. Daniel Sarewitz, Co-Director of the Consortium for Science, Policy & Outcomes at Arizona State University; (3) Dr. Fiona Murray, Associate Professor of Management in the Technological Innovation & Entrepreneurship Group at MIT Sloan School of Management; and (4) Dr. Albert H.
Teich, Director of Science & Policy Programs at the American Association for the Advancement of Science (AAAS).

Summary

In his opening statement, Chairman Lipinski spoke about the need for Congress to have accurate data in the Science of Science and Innovation Policy (SciSIP) field in order to ensure that Members have the necessary information to allocate federal dollars and oversee programs efficiently and effectively. Ranking Member Ehlers (R–MI) noted that Congress needs an updated guidance document for science and innovation policy, and also emphasized the importance of ensuring measurable returns on scientific research investments.

During the witness testimony, Dr. Lane noted that SciSIP efforts are particularly important because “you can’t manage what you can’t measure, and what you measure is what you get” with respect to science and research programs. She also emphasized the importance of collecting better data, as the STAR METRICS program is doing, and the importance of developing a bottom-up, no-burden empirical data infrastructure to be made available to all science agencies and recipients of federal funding. Dr. Sarewitz agreed that it is hard to envision effectively steering the research enterprise without SciSIP’s efforts and data, but also noted that SciSIP must be careful to focus on outcome-based science rather than outputs, and on the need for better relationships and collaboration between those doing the research and those who will use it to affect policy decisions.

Dr. Murray noted that recent SciSIP work has been centered on two developments: the development of and investment in a massive scientific data infrastructure, and the social science methodologies involved in program and policy evaluation. She also noted the need to focus on lower-level distribution strategies for SciSIP research, rather than emphasizing national and agency-level policymaking. Dr. Teich focused on the need to establish a working SciSIP community, and to bridge the gaps between different disciplines and between researchers and government workers to ensure that these dialogues are effective and ongoing.

During the question and answer period, Members and panelists discussed the role of the Appropriations Committee in evaluating federal science programs, scientists’ ability to characterize and measure social outcomes of research and development spending, how to better collect and use data to support the SciSIP field, how to effectively and persuasively educate Members of Congress about the importance of science policy, and the kind of academic programs and initiatives needed to produce interdisciplinary, science policy-focused career paths.
Background

On Thursday, March 5, 2009, the Honorable Gabrielle Giffords (D–AZ) presiding, the Subcommittee on Space and Aeronautics held a hearing to examine the status of the National Aeronautics and Space Administration’s (NASA) efforts to improve the cost management of its acquisitions and programs. The hearing focused on (1) the results of the Government Accountability Office’s (GAO) recently completed assessments of selected large-scale NASA projects and its designation of NASA acquisition management as a “high-risk” area, (2) the causes of cost growth and schedule delays in NASA acquisitions and (3) the agency’s progress in addressing them. There were three witnesses: (1) Christopher Scolese, Acting Administrator of the National Aeronautics and Space Administration; (2) Ms. Christina T. Chaplain, Director of Acquisition and Sourcing Management for the Government Accountability Office; (3) Gary P. Pulliam, Vice President of the Civil and Commercial Operations at The Aerospace Corporation.

Summary

Chairwoman Giffords expressed that the hearing was the first step in the subcommittee’s oversight of NASA’s acquisition and program management. She admitted NASA’s cost management and schedule issues would not be a simple fix and it would take a collaborative effort to improve practices. Ranking Member Olson (R–TX) echoed Chairwoman Giffords sentiment on the challenges that lay ahead, but also shared her optimism over the progress NASA had achieved so far.

Acting Administrator Scolese testified about internal and external factors that affect NASA’s cost and schedule growth, and stated that some factors were outside of the administration’s control. However, he was pleased to report that NASA had made improvements in standards for project lifecycle milestones and accountability for their stakeholders.

Ms. Chaplain testified that NASA had a history of failing to address and correct its poor cost estimating practices. However, Ms. Chaplain stated that in the most recent assessment of NASA’s large-scale projects, GAO found that “improvements have been made, but problems still exist.” Mr. Pulliam’s testimony described
four main causes of NASA's cost growth and schedule delays, and offered a rationale for why some of those problems still existed.

4.5(b)—Aviation and the Emerging Use of Biofuels

March 26, 2009

Hearing Volume No. 111–15

Background

On Thursday, March 26, 2009, the Honorable Gabrielle Giffords (D–AZ) presiding, the House Committee on Science and Technology's Subcommittee on Space and Aeronautics convened a hearing to review the status of federal and industry research and development (R&D) efforts to develop and demonstrate the safe and cost-effective use of biofuels in civil aviation. The hearing focused on (1) what research was needed to determine the optimal characteristics of both aircraft engine technologies and biofuels to minimize harmful emissions while maintaining aircraft safety and reliability and maximizing performance? (2) What were the most realistic aviation biofuel options over the long term, and what will be required to achieve widespread use of biofuels in aviation? (3) What steps, if any, was the federal government taking to assess the viability of biofuels for aviation or to facilitate their widespread use in aviation? (4) What were the results of the recently completed aviation biofuels demonstrations?

There were three witnesses: (1) Dr. Jaiwon Shin, Associate Administrator of Aeronautics Research Mission Directorate at the National Aeronautics and Space Administration; (2) Dr. Lourdes Q. Maurice, Chief Scientist of the Federal Aviation Administration and Environmental Lead for the Commercial Aviation Alternative Fuels Initiative; (3) Dr. Alan H. Epstein, Vice President of Technology and Environment at Pratt & Whitney, United Technologies Corporation; (4) Mr. Billy M. Glover, Managing Director of Environmental Strategy at Boeing Commercial Airplane Company; and (5) Mr. Holden E. Shannon, Senior Vice President of Global Real Estate and Security at Continental Airlines.

Summary

Chairwoman Giffords opened the hearing by remarking that America faced big challenges to achieve energy independence and protect and preserve its environment; a challenge that aviation would play a role in resolving. She raised concerns that the “odds of success will be reduced without an integrated federal/private sector approach to evaluating the potential benefits and costs of aviation biofuels, including a systematic plan to understand their impacts on both existing and future aircraft technology.” Ranking Member Olson (R–TX) shared Chairwoman Giffords concerns and suggested the federal government should help fund research to end our dependence on foreign sources of energy.

Dr. Shin testified that “NASA has initiated a modest research effort in 2007 that builds upon the existing expertise in fuel chemistry and processing, combustion, and gas turbine engines to address some of the challenges associated with the application of these fuels for aviation.” Dr. Shin stated that it would take a con-
certed effort by multiple government agencies, aerospace industries, academia, and biofuel producers to successfully implement widespread use of biofuels in aviation.

Dr. Maurice testified that the FAA had “identified a number of options that can replace petroleum jet fuel without the need to modify aircraft, often referred to as drop-in fuels.” However, she was quick to admit that biofuels in aviation still faced challenges in certification, quantification of environmental impacts, and infrastructure and deployment.

Dr. Epstein testified that testing had shown “an engine can be designed to reduce fuel consumption if it can be assured that all aircraft fuel was largely bio-jet fuel.” In his conclusion, Dr. Epstein proclaimed that the remaining challenges were not in the realm of propulsion engineering but rather belonged to the business community, biological and chemical engineers, ecologists, and lawmakers.

Mr. Glover testified that Boeing’s main goal was to facilitate rapid commercialization of the biofuel industry and capture the opportunities it offered the aviation industry. He voiced Boeing’s shared sentiment with the other witnesses that government played a role in supporting the commercialization and development of aviation biofuels in order to make a successful transition.

Mr. Shannon testified on behalf of Continental that airlines have a strong economic incentive to reduce their fuel consumption and resulting greenhouse gas emissions.

4.5(c)—Keeping the Space Environment Safe for Civil and Commercial Users

April 28, 2009

Hearing Volume No. 111–22

Background

On Tuesday, April 28, 2009, the Honorable Gabrielle Giffords presiding, the Subcommittee on Space and Aeronautics held a hearing to examine the challenges space traffic management and orbital debris posed to civil and commercial space users. The Subcommittee explored potential measures to improve information available to civil and commercial users to avoid in-space collisions as well as ways to minimize the growth of future space debris. The hearing focused on the following questions and issues: (1) What were the current and projected risks to civil and commercial space users posed by other spacecraft and space debris? (2) What information and services were available to civil and commercial space users in terms of real-time data and predictive analyses? (3) What could be done to minimize the growth of space debris? (4) What was the level of coordination among military, civil, and commercial space users in the sharing of space situational awareness information? (5) Have shortcomings been identified by civil and commercial space users with regards to the availability of situational awareness information they need? (6) How were these shortcomings being addressed? (7) Have civil and commercial space users identified their long-term situational awareness needs? What options were being considered to address them?
There were four witnesses: (1) Lt. Gen. Larry D. James, Commander, 14th Air Force, Air Force Space Command, and Commander, Joint Functional Component Command for Space, U.S. Strategic Command; (2) Mr. Nicholas Johnson, Chief Scientist for Orbital Debris, National Aeronautics and Space Administration; (3) Mr. Richard DalBello, Vice President of Government Relations Intelsat General Corporation; (4) Dr. Scott Pace, Director of the Space Policy Institute, George Washington University.

Summary

Chairwoman Giffords (D–AZ) started by stating that people commonly see space as endlessly large and expansive and that the recent collision of two orbiting satellites is a reminder just how crowded space has become. The Chairwoman then stated the Subcommittee hopes to answer questions about whether the incident was a rare fluke or not and about the U.S.’s current ability to help prevent potential satellites collisions. Ranking Member Olson (R–TX) began his opening remarks on how the Iridium-Kosmos collision should serve as a reminder that space-faring nations can no longer be complacent on this issue. He also stressed the need for space traffic management with intensive monitoring programs.

During the opening testimonies, General James explained what the Joint Functional Component Command (JFCC) for Space was doing in terms of tracking orbital objects. He also stated that the Air Force Space Command “will continue to work closely with the commercial and foreign space communities to understand their evolving needs and desires for space situational awareness . . . ”

Mr. Johnson stated the U.S. needed to limit space debris because the debris remains in low-Earth orbit for long periods of time. He also spoke about NASA’s role in the matter.

Mr. Dalbello talked about what the commercial satellite industry was doing in terms of tracking and the process of inter-company and government cooperation.

Dr. Pace spoke about the need for international and industry cooperation and concerns about the need for improving tracking data accuracy.

4.5(d)—External Perspectives on the FY 2010 NASA Budget Request and Related Issues

June 18, 2009

Hearing Volume No. 111–37

Background

On Thursday, June 18, 2009, the Honorable Gabrielle Giffords (D–AZ) presiding, the Subcommittee on Space and Aeronautics heard from advisory and other stakeholder bodies on issues relevant to the National Aeronautics and Space Administration (NASA).

There were six witnesses: (1) Mr. John C. Marshall, member of the Aerospace Safety Advisory Panel (ASAP); (2) Dr. Kenneth M. Ford, Chair of the NASA Advisory Council (NAC); (3) Mr. Robert M. Hanissee, Chair of the Audit and Finance Committee of NAC; (4) Dr. Raymond S. Colladay, Chair of the National Academies’ Aero-
nautics and Space Engineering Board (ASEB); (5) Dr. Berrien Moore III, member of the National Academies' Space Studies Board (SSB); (6) Mr. J.P. Stevens, Vice-President for Space Systems at the Aerospace Industries Association (AIA).

Summary

Chairwoman Giffords instructed Members to dispense with opening statements in order to ensure sufficient time for the subcommittee to hear all spoken witness testimonies before 10:30 votes.

Mr. Marshall spoke first, and told the subcommittee that from the perspective of the ASAP, priority in the NASA budget ought to be given to making sure safety was not sacrificed due to reduced funding. In his view, allocating sufficient resources to extend the shuttle program without compromising safety would leave NASA with insufficient resources to fulfill its other directives, and endanger the future of the entire space program. Mr. Marshall also called for a redefinition of NASA's exploration missions, since recent budget cuts made the current exploration program unsustainable. He announced that while ASAP was pleased with NASA's compliance with the recommendations of the Columbia Accident Investigation Board, there were still risks that could not be mitigated without extensive redesign of the shuttle. Mr. Marshall also discussed Commercial Orbital Transportation Services. He then listed a few areas ASAP believed NASA could pay more attention to in fostering a culture of safety.

Dr. Ford focused on three areas critical to the future of America's space program: developing new space transportation architecture, reestablishing a technology R&D program, and, most importantly, securing stable funding linked to a stable purpose. Dr. Ford saw the accelerated development of a heavy-lift launch vehicle as a crucial first step in modernizing space transportation, and ensuring access to the International Space Station (ISS), since commercial transport and the Ares I project would not be available for many years to come.

Mr. Hanisee began his remarks with a discussion of NASA's past managerial and financial tangles. He said that although problems like the anarchic accounting systems of ten autonomous centers have been reined in, the intractable issue of property accounting continued to muddy the fiscal waters. Legacy assets like the Space Shuttle, and the ISS were particularly problematic from an accounting point of view. One possible solution would be to write off the troublesome assets as Research and Development.

Dr. Colladay focused his testimony on technology development. He thought that R&D programs at NASA were driven too much by the needs of the moment. While there have been significant advances from technology developed to fill known program needs, especially in environmentally responsible aviation, a long-term, research-driven technology development program would reinvigorate the agency's capabilities. Moreover, such a program should be organized so as to support not just NASA, but also commercial space programs and other government agencies. However Dr. Colladay also expressed concern that NASA lacked sufficient funds to prop-
Dr. Moore spoke of the need to balance NASA’s disparate priorities. While he felt that the 2010 budget was a distinct improvement over 2009, Dr. Moore stated that NASA should still try to clamp down on costs, to do more with less, or simply try to do less. He reported that the Earth Science Decadal missions in particular were in dire financial straits. The agency ought to cut back on its programs, and be more careful about selecting programs in the first place, in order to avoid the excessively expensive and focus on the possible. Cutting back on the number of NASA Centers and National Labs would be a good start.

Mr. Stevens expressed concern over the insufficient funding of the Ares V and the Lunar Lander in the current NASA budget, and the imminently loss of jobs associated with those projects. He also urged the Subcommittee to continue funding ISS without taking funds away from other critical programs. Mr. Stevens said that another great disappointment in the FY 2010 budget was the decrease in funding for NASA education initiatives, which he hoped the Subcommittee would correct in future budgets. Mr. Stevens also recommended that commercial space launch indemnification be extended for at least another 5 years, as its elimination would drive even more launch business overseas.

The hearing was adjourned due to votes.

4.5(e)—Enhancing the Relevance of Space to Address National Needs

July 16, 2009

Hearing Volume No. 111-44

Background

On Thursday, July 16, 2009 the Subcommittee on Space and Aeronautics held a hearing on enhancing the relevance of space activities to address national needs. The hearing (1) examined how recent reports by the National Research Council and The Space Foundation characterized the relevance of space-related activities, particularly their role in improving the health, economic wellbeing, and the quality of life of all Americans; (2) reviewed what should be done to maintain and enhance that relevance; and (3) analyzed whether enhanced awareness of the contributions from space-related activities would result in inspiring future generations of Americans.

There were four witnesses: (1) General [U.S. Air Force, retired] Lester L. Lyles, Chair of the Committee on the Rationale and Goals of the U.S. Civil Space Program, Aeronautics & Space Engineering Board of the National Research Council; (2) Ms. Patti Grace Smith, Board of Directors of the Space Foundation; (3) Ms. Deborah Adler Myers, General Manager, Science Channel, Discovery Communications; and (4) Mr. Miles O’Brien, Journalist.

Summary

Chairwoman Giffords (D–AZ) starts off by indicating the 40th anniversary of Apollo and how it is one of the most significant
achievements of the U.S. space program. She proceeds to indicate that America's space program must be relevant to the broad national needs to continue support from Congress and by the American people. She then asks that if we have an exciting and relevant space program, but the American people don't hear about it, then is it relevant?

Ranking Member Olson (R–TX) starts his opening statement by indicating that NASA has high public support but suffers when put in a list of competing goals. He continues and says that to improve, we must make sure our human spaceflight goal is adequately funded, and that the mission has to be effectively conveyed.

General Lyles testified that the US still has the preeminent civil space program. He then mentioned that his team generated six goals, such as to sustain and expand our leadership in science.

Ms. Smith followed and said that space was relevant in every American’s life and that the U.S. needed to acquire more civilian and national security space systems. She added that not taking the initiative will require the U.S. to be more reliant on foreign space systems.

Ms. Myers indicated that the space community struggled against the cliché that science was dry and boring. At the Science Channel, Ms. Myers noted that they developed television programming and reached out to their audience on Facebook and Twitter.

Mr. O’Brien testified that the engineers at NASA lack communication skills. He proposed that NASA missions should all have a public relations requirement where the message should be part of the mission, and not an afterthought. Mr. O’Brien also proposed that there needed to be money set aside for such operations.

4.5(f)—Strengthening NASA’s Technology Development Programs

October 22, 2009

Hearing Volume No. 111–58

Background

On Thursday, October 22, 2009, the Honorable Gabrielle Giffords presiding, the Subcommittee on Space and Aeronautics held a hearing on NASA’s efforts to define advanced concepts and develop innovative technologies. The hearing examined (1) the opportunities, challenges, and issues identified in external reviews associated with NASA’s analysis of advanced concepts and long-term development of technology; (2) NASA’s progress in responding to the provisions in NASA Authorization Acts and recommendations from external reviews associated with technology development; and (3) NASA’s efforts to collaborate and coordinate with other federal agencies on technology development issues.

There were three witnesses: (1) Dr. Robert D. Braun, Co-Chair of the National Research Council’s Space Engineering Board Committee to Review the NASA Institute for Advanced Concepts; (2) Dr. Raymond S. Colladay, Vice-Chair of the National Research Council’s Aeronautics and Space Engineering Board Committee on the Rationale and Goals of the U.S. Civil Space Program; (3) Mr. Christopher Scolese, Associate Administrator of NASA.
Summary

Chairwoman Giffords opened the hearing by stating that all three witnesses, as well as the subcommittee, would probably agree that NASA has been under-investing in technology development. However, she added that the under-funded technology development programs cannot and should not be funded from NASA’s other, already under-funded, projects. Ranking Member Olson suggested that NASA might be better served if it returned to a more centralized structure, to encourage long-term rather than momentary goals.

Dr. Braun began his testimony by asserting that the original organization of the NASA Institute of Advanced Concepts (NIAC) was effective. However Dr. Braun allowed that modifications to both NIAC and NASA would improve NIAC’s effectiveness, especially the reestablishment of aeronautics and space systems technology development enterprise within NASA. In his view, NASA ought to focus its efforts on short-term, mid-range missions and long-term, strategic technology investments. To this end, Dr. Braun recommended that NASA establish a formal program to direct the development of a selected set of technologies.

Dr. Colladay started off by observing that long-term advanced research and development (R&D) did not happen in industry, because the pay-off was too distant, or in academia in the absence of sustained government funding. To revitalize NASA’s long-term technology development, Dr. Colladay recommended technology R&D be independent of NASA’s other major programs, with an organizational structure modeled along the lines of the Defense Advanced Research Projects Agency (DARPA). This hypothetical technology mission area ought to reach outside NASA, to engage with commercial space companies as well as other government agencies and departments. Moreover, before embarking on this new program, there should be a comprehensive assessment of the current state of the art advanced space technology. Dr. Colladay concluded by asserting the importance of technology relevance and transition.

Mr. Scolese began by reporting that recent National Academy reviews of NASA suggested that NASA ought to shift its emphasis from technologies for flight to the development of game-changing technology. The timeframe for such technology investment should be 10–20 years. An independent management structure would be best suited to the early stages of these projects. Mr. Scolese added that NASA did invest in technological development in a limited way through its partnership program, as well as through its mission and engineering programs, despite its lack of a long-term development program. He said that NASA has also increased its outreach efforts to outside groups, joining with other government organizations to fund life science research on the International Space Station.
4.5(g)—The Growth of Global Space Capabilities: What’s Happening and Why It Matters

November 19, 2009

Hearing Volume No. 111–65

Background

On Thursday, November 19, 2009, the Honorable Gabrielle Giffords (D–AZ) presiding, the House Subcommittee on Space and Aeronautics held a hearing on the growth of global space capabilities, and why they matter.

There were five witnesses: (1) Mr. Marty Hauser, Vice President for Research and Analysis at the Washington Operations of the Space Foundation; (2) Mr. J.P. Stevens, Vice President for Space Systems at the Aerospace Industries Association; (3) Dr. Scott Pace, Director of the Space Policy Institute at George Washington University; (4) Dr. Kai-Uwe Schrogl, Director of the European Space Policy Institute; (5) Dr. Ray A. Williamson, Executive Director of the Secure World Foundation.

Summary

Mr. Hauser began his testimony by reporting that most space-faring nations now had the same space capabilities as the U.S. He said that more than 60 countries had space agencies, and many of them were increasingly willing to share their expertise with countries not as far along. He added that America was losing its competitive position in launch, manufacturing, and service capabilities. He further noted that while there were commercial opportunities in the expansion of launch capabilities, there was also the threat of competition. Mr. Hauser told the Subcommittee that if America wished to retain its primacy in space, Congress would have to bite the financial bullet, and give NASA the funds it needs to succeed.

Mr. Stevens identified three areas in which the U.S. was losing its leadership in space: satellites, human spaceflight, and launch systems. He was especially concerned that the U.S. commercial space launch industry only had 15% of the global market. Mr. Stevens reminded the Subcommittee that space capabilities, especially launch systems, could easily be translated into military capabilities; in other words, the loss of U.S. superiority in space was a threat to national security as well as to national pride. He agreed with the Chairwoman’s emphasis on international cooperation, but added that any such deals should avoid threatening America’s industrial base or national security. For Mr. Stevens, the International Space Station (ISS) was an example of a successful cooperation, and therefore should be extended through 2020.

Dr. Pace used his opening statement to remind the Subcommittee that the geosynchronous arc gets more crowded every year. He laid out the Chinese government’s plans for the next decade, which culminated with a three-man space station in 2020. Dr. Pace said that if the U.S. did not make plans beyond the ISS, America would essentially be bowing out of the human spaceflight business. He explained that space tourism and commercial spaceflight, though valuable, could hardly sustain a major inter-
national cooperative human spaceflight effort. Dr. Pace believed that the NASA Authorization Acts of 2005 and 2008 still offered the clearest and most practical way forward for the U.S. space program.

Dr. Schrogl provided European perspectives on the expansion of space-faring capabilities around the world, and the implications of that expansion on trans-Atlantic relations. In his view, space-based security concerns were a promising area of trans-Atlantic cooperation. A similar cooperation was highly necessary in the regulation of space as a strategic economic area. Dr. Schrogl also hoped that future years would see more trans-Atlantic cooperation on the less-urgent but equally vital area of space exploration.

Dr. Williamson shared the Secure World Foundation's insights on the growth of world space capabilities, and why those changes were vital to U.S. interests. Like previous panelists, he noted the scientific and commercial opportunities created by the nascent space programs of other nations. Dr. Williamson added that an increasing amount of space debris made the lack of any effective governance of the global commons of outer space a more acute problem every day. In his view, the U.S. could best ensure its own orbital security by engaging with emerging space states regarding adherence to international best practices. Dr. Williamson said that assisting new space states was also an opportunity for the U.S. to flex its soft power, to use its technological and economic capabilities to influence foreign policymakers. He also added that working with states to build space capacity would create a larger market for U.S. goods as well as a long-term sustainable security climate in space based on cooperation rather than competition and that ITAR reform would go a long way in this regard as well.

4.5(h)—Ensuring the Safety of Human Spaceflight

December 2, 2009

Hearing Volume No. 111–66

Background

On December 2, 2009, the Honorable Gabrielle Giffords presiding, the Subcommittee on Space and Aeronautics held a hearing focused on issues related to ensuring the safety of future human space flight in government and non-government space transportation systems. The hearing examined (1) the steps needed to establish confidence in a space transportation system’s ability to transport U.S. and partner astronauts to low Earth orbit and return them to Earth in a safe manner, (2) the issues associated with implementing safety standards and establishing processes for certifying that a space transportation vehicle is safe for human transport, and (3) the roles that training and experience play in enhancing the safety of human space missions.

There were six witnesses: (1) Mr. Bryan D. O’Connor, Chief of Safety and Mission Assurance at the National Aeronautics and Space Administration (NASA); (2) Mr. Jeff Hanley, Program Manager of the Constellation Program at NASA; (3) Mr. John C. Marshall, member of the Aerospace Safety Advisory Panel (ASAP); (4) Mr. Bretton Alexander, President of the Commercial Spaceflight
Chairwoman Giffords (D–AZ) opened the hearing by saying that while human spaceflight would never be risk-free, Congress must understand the fundamental crew safety issues when making decisions about the program. She said that NASA’s Constellation program took the recommendations of the Columbia Accident Investigation Board (CAIB) very seriously, and that any alternative approach would therefore have to prove itself at least as safe as Ares and Orion.

Rep. Hall (R–TX) reminded the Subcommittee that the Astronaut Office had recommended, back in 2004, that a crew escape system module be included in any new launch vehicle, and insisted that this would continue to be the case. Rep. Olson (R–TX) added that the space program ought not to take advantage of the astronauts’ pioneering spirit and fall short on safety issues. He also said that the increased participation of commercial providers would entail great changes at NASA, not necessarily for best.

Mr. O’Connor began by explaining the mission of the Office of Safety and Mission Assurance. He said that many of the programs planned by his office were being implemented at the new NASA Safety Center in Cleveland. In his view, working with NASA’s Russian counter-parts on Apollo-Soyuz, Shuttle-Mir and the International Space Station (ISS) had been an invaluable learning experience on different safety procedures. Mr. O’Connor added that his office was also investing 2009 Recovery Act funds in supplementing activities related to technologies that enable commercial human spaceflight capabilities.

Mr. Hanley focused on outlining how the Constellation Program had sought to improve crew safety above and beyond the features of previous crewed aircraft. He said that the design goal of the program was a 10-fold increase in astronaut safety relative to the shuttle missions. He also reported that NASA was developing a new integrated test and verification plan as part of its design review process.

Mr. Marshall criticized the Augustine Report for its oversimplified approach to safety issues. Mr. Marshall believed that because commercial providers had no reason to develop strong safety guidelines on their own, NASA had to lay down and police a set of guidelines on their behalf. He insisted that safety was the greatest weakness of the COTS program, and NASA would have to oversee construction carefully to ensure that companies did not take on undue risks in an effort to cut costs or speed up production.

Mr. Alexander spoke for the 20 member organizations of the Commercial Spaceflight Federation. He regarded commercial crew transport as complementary, not competitive, with NASA’s mission. Mr. Alexander claimed that since low-Earth orbit was an easier and more focused destination than those intended for the Orion Crew Exploration Vehicle, the commercial program would be more cost-effective. He agreed with previous speakers that safety was the paramount concern of all those involved in spaceflight programs, commercial or otherwise. He suggested that the FAA should
Dr. Fragola described his four laws for a safe space launcher design. To begin with, the design must be as inherently safe as possible. Secondly, the crew should be put at the top of the rocket, as far away from the source of failure as possible. There must also be a credible abort trigger set, and finally, the design should include a tested abort system that allows for a safe crew escape and recovery. Dr. Fragola said that under these criteria, the Ares I was the safest vehicle around, two to three times safer than the alternatives. This was because of its reliability and its benign abort conditions.

General Stafford stated that while he strongly agreed with the majority of the findings of the Augustine Report, there were a few he objected to. His disagreements with the report began with its recommendation that the responsibility for transportation of crew and cargo to the ISS be given to commercial contractors exclusively. First of all, commercial cargo transport would require the construction of costly, time-consuming autonomous transfer vehicles. Secondly, safe delivery of a crew to the ISS required the successful combination of a human-rated launch vehicle, the spacecraft itself, and the launch abort system. The Augustine Report lacked an in-depth analysis of these vital safety issues. General Stafford did not see what entity other than NASA could credibly establish and verify appropriate standards for human spaceflight.

4.5(i)—Independent Audit of the National Aeronautics and Space Administration

December 3, 2009

Hearing Volume No. 111–68

Background

On Thursday, December 3, 2009, the Subcommittee on Investigations and Oversight convened a joint hearing with the Subcommittee on Space and Aeronautics for the purpose of receiving the annual independent auditor’s report on the financial status of the National Aeronautics and Space Administration (NASA). Ernst & Young, the agency’s auditor, had issued a so-called “disclaimed opinion,” indicating that the agency financial statements did not fairly represent NASA’s accurate financial condition. Since 1990, NASA has invested significant time and effort in three attempts to develop an acceptable financial management system. While the audit report credited NASA with notable progress in correcting its weaknesses, Ernst & Young considered efforts to properly value legacy equipment on the balance sheets to fall short of government accounting standards. The hearing was called to determine what would be needed for NASA to receive unqualified opinions in subsequent annual audits.

Testifying at the hearing were: (1) Hon. Paul Martin, the newly-appointed Inspector General of NASA (accompanied by his deputy, Mr. Tom Howard); (2) Mr. Paul Murrin, Ernst & Young’s senior auditor for the NASA contract since 2004 and Partner in the com-
pany's Assurance and Advisory Business Services; and (3) Hon. Elizabeth Robinson, NASA's new Chief Financial Officer.

**Summary**

One of the responsibilities of an agency Inspector General is to manage the contract providing for the audit of the agency's financial statements by an independent private firm every year. Mr. Martin's testimony summarized the results of the Fiscal Year 2009 audit, where auditor Ernst & Young was not willing to state an opinion on whether the statements "fairly represented" the agency's assets and liabilities. For the past two decades, NASA has struggled with financial management systems that have been unable to reliably track and report on fund management and control. This has repeatedly been highlighted by the Inspector General's office and the Government Accountability Office as a primary management challenge for NASA.

According to Mr. Murrin, NASA was in the end unable to provide adequate and appropriate documentary evidence that the values assigned by the agency to older property, plant and equipment used in programs such as the Space Shuttle and Space Station. This has been a persistent issue highlighted by previous audit reports and the focus of continuous collaboration by NASA and Ernst & Young to correct the problems. While Mr. Murrin's testimony described the procedural changes NASA has applied in its effort to clear this material weakness, the audit notes that these are primarily applied to current and prospective contracts. The major problem remains that the financial controls in previous years failed to preserve the required information.

It falls to Dr. Robinson to manage the corrective actions needed to eliminate the weak spots identified by the audit. In her testimony, she described the continuing efforts since 2002 aimed at bringing the upgraded financial management systems into compliance with modern standards and best practices. Identifying and correcting data discrepancies and improving staff skills have occupied much time.

In the particular item providing for the disclaimer of opinion, Dr. Robinson stated that it originated in a 1998 decision to change the accounting process for space equipment so that it was no longer fully captured in the year such equipment was obtained. NASA found that its contracting process and method failed to adapt to the new accounting requirement and thus failed to obtain and retain the records and information needed to conform. With the failure to correct this deficiency, the gaps in records grew and led auditors to express growing discomfort about the effect on the accuracy of agency financial records.

In addition to NASA's direction to change agency practice in contracting, a new Federal accounting standard is now in place that will assist NASA—and other agencies like DOD in similar straits—to deal with the missing historical records. While significant resources have been applied to reconstruct the evidence in an attempt to satisfy the requirement for actual documentation, the new standard allows for the development of appropriate estimating methods to generate reasonable approximations of the property, plant and equipment at issue.
Much of the discussion with the witnesses concerned the need for continuing collaboration to assure that the agency and the auditors shared a common view of the proper implementation of the new standards for estimation. Members also sought assurances that the other risks highlighted in the audit report, relating to the calculation of NASA's environmental liabilities and the need to finish bringing the financial management systems up to legal standards, were not waiting to replace legacy asset valuation as the basis for a disclaimed opinion in the next audit. The witnesses express confidence that NASA would finally begin receiving unqualified opinions beginning with the fiscal year 2010 audit.

4.5(j)—Key Issues and Challenges Facing NASA: Views of the Agency’s Watchdogs

February 3, 2010

Hearing Volume No. 111–73

Background

On February 3, 2010, the Honorable Gabrielle Giffords presiding, the Subcommittee on Space and Aeronautics held a hearing on the key issues and challenges facing the National Aeronautics and Space Administration (NASA) as seen by the agency’s “watchdogs”—the NASA Inspector General, the Government Accountability Office (GAO), and the Aerospace Safety Advisory Panel (ASAP). Leveraging the unique perspectives these organizations developed in the course of their work at NASA in the areas of management, mission execution, and security and safety oversight, the hearing examined (1) the critical issues and challenges facing NASA that warrant congressional attention and (2) the corresponding commitment, initiatives, and policies needed by NASA to successfully address these issues and challenges. Separate hearings would address NASA’s Fiscal Year 2011 budget request as well as the administration’s human space flight strategy after they are announced.

There were three witnesses: (1) Hon. Paul K. Martin, Inspector General, NASA; (2) Ms. Cristina T. Chaplain, Director, Acquisition and Sourcing Management, GAO; (3) Vice-Admiral Joseph W. Dyer [U.S. Navy, Ret.], Chair, ASAP.

Summary

Mr. Martin identified five critical challenges facing NASA: (1) transitioning from the Space Shuttle to a new generation of space vehicles; (2) enhancing risk management techniques; (3) improving the agency’s financial management; (4) addressing systemic weaknesses in acquisition and contracting processes; and (5) ensuring the security and integrity of NASA’s information technology (IT) systems.

Ms. Chaplain concurred with Mr. Martin on the issues facing NASA, listing as NASA’s main challenges retiring the Space Shuttle, completing and operating the International Space Station (ISS), acquiring complex systems for research, improving financial management and protecting IT systems. She added that however broad the changes proposed in the President’s new budget, they did not
alter these basic concerns. However, Ms. Chaplain also noted that previous commercial approaches did not succeed because they lacked sound government insight and oversight.

Vice-Admiral Dyer quoted the conclusion of his panel’s 2009 report, emphasizing that the Ares I was designed with an emphasis on safety, and any new approach would have to guarantee an equal or greater safety level. He called on NASA to create clear Human Rating Requirements (HRR) for potential commercial contractors. Vice-Admiral Dyer added that managing the transition of the shuttle workforce would now be doubly important.

4.5(k)—Proposed Changes to NASA’s Exploration Program: What’s Known, What’s Not, and What Are the Issues for Congress?

March 24, 2010

Hearing Volume No. 111–91

Background

On March 24, 2010 the Subcommittee on Space and Aeronautics held a hearing on the administration’s proposed changes to the National Aeronautics and Space Administration’s (NASA) exploration program.

There were two witnesses: (1) Mr. Douglas Cooke, Associate Administrator for the Explorations Systems Mission Directorate at NASA; and (2) Mr. A. Thomas Young, Lockheed Martin (Ret.).

Summary

Chairwoman Giffords (D–AZ) opened the hearing by noting that the President’s budget had been found deficient by the Congress and the American people. She added that in cancelling the Constellation program, the new budget was ending a successful program in which the government had already invested five years and $14 billion. Moreover, she remarked that cancellation would deprive the U.S. of assured access to LEO. Ranking Member Olson (R–TX) reminded the Subcommittee that the President’s new budget was far from a fait accompli, and that the final decision rested with Congress, not the Executive. He remarked that he disagreed with NASA’s cancellation of procurement activities and the Constellation Program.

Mr. Cooke began by confirming that the ultimate destination in human spaceflight remained Mars. He said that to further this goal, the FY 2011 budget would fund three new programs aimed at expanding the capabilities of America’s human spaceflight program. While commending those who worked so diligently on the Constellation program, Mr. Cooke affirmed the need for commercial groups to take over transit to and from LEO, leaving NASA free to go beyond.

In oral testimony, Mr. Young strongly condemned the proposed cancellation of the Constellation program. He said that neither Soyuz nor industry provided a long term solution to the problem of American access to LEO. While commercial industry should be encouraged, it was still a long way from being able to satisfy human space transportation needs. Therefore, the U.S. ought to
commit instead to developing a heavy-lift capability along the lines of the Ares I. Mr. Young added that what NASA needed was a Plan A, such as could not be found in the budget proposal. If enacted, the proposed budget would lead to an irreversible deterioration of America’s aerospace workforce.

4.5(l)—Mitigating the Impact of Volcanic Ash Clouds on Aviation—What Do We Need to Know?

May 5, 2010

Hearing Volume No. 111–93

Background

On May 5, 2010, the Honorable Gabrielle Giffords presiding, the Subcommittee on Space and Aeronautics held a hearing on the research needed to improve our understanding of the impact of volcanic ash clouds on aircraft and aircraft operations and what could be done to mitigate that impact. Last year, when the Mount Redoubt volcano erupted southwest of Anchorage, one of the operating airlines grounded its fleet, diverted flights and wrapped the engines of its parked planes in plastic sealant. More recently, the eruption of Iceland’s Eyjafjallajökull volcano paralyzed air travel in Europe for six days, inconveniencing hundreds of thousands of passengers around the world and causing airline revenue losses of at least $1.7 billion.

There were five witnesses: (1) Dr. Tony Strazisar, Senior Technical Advisor for NASA’s Aeronautics Research Mission Directorate [Substituting for Associate Administrator Jaiwon Shin]; (2) Dr. Jack A. Kaye, Earth Science Division at NASA; (3) Ms. Victoria Cox, Senior VP for NextGen and Operations Planning at the FAA’s Air Traffic Organization; (4) Captain Linda M. Orlady, Executive Air Safety Vice Chair of the Air Line Pilots Association, International; and (5) Mr. Roger Dinius, Flight Safety Director at GE Aviation.

Summary

Chairwoman Giffords remarked that she concluded from the recent eruption of the Eyjafjallajökull volcano in Iceland that aviation regulators have insufficient scientific data either to track the density and position of volcanic ash clouds or to comprehend the full extent of their effect on aircraft. She urged the FAA to work with NASA, pilots and aircraft manufacturers in marshalling U.S. resources to deal with the issue.

Ranking Member Olson wondered how deeply the Federal Government should invest in researching such rare events. However he added that the events following the eruption of Eyjafjallajökull made such research more plausible, and perhaps there were similarly obscure hazards that may have been overlooked.

Dr. Strazisar testified regarding NASA’s past experience with the impact of volcanic ash on aircraft. He said that volcanic ash ingestion is rare because the established practice is to avoid flight in the vicinity of volcanic debris. Dr. Strazisar shared with the committee the experience of a NASA DC–8 research plane that in February of 2000 flew through the edge of an ash cloud produced by Iceland’s
Heckla volcano. Even though that encounter only lasted seven minutes, disassembling the engines revealed significant damage invisible to the naked eye. Improving forecasts and operational procedures could go a long way towards providing a solution for air traffic management.

Dr. Kaye said that NASA’s Earth Science program, through its 13 earth-observing missions, fed critical information on volcanic debris to NOAA and other agencies. The new satellites the Earth Science division would be launching over the next year would further augment this data stream. Since volcanic eruptions are the only sources of sulfur dioxide large enough to be detected by satellite, NASA and NOAA could then provide accurate, near real-time information on the location of sulfur dioxide emissions, which can be particularly useful in the first few days after an eruption.

Ms. Cox reiterated that accidents and incidents caused by encounters with volcanic ash are quite rare. She said the FAA treats volcanic ash much like a major weather event. According to Ms. Cox, the relatively constrained airspace over Europe limited the options available to the European Union (EU) in its response to the Eyjafjallajökull eruption. Since NextGen focuses on quality and delivery of information, it would aid operators and flight traffic controllers in getting the necessary data.

Capt. Orlady observed that in addition to engine and windshield damage, volcanic gases also pose a serious threat to the health of crew and passengers alike. She said that a lack of standardization of available forecasts complicated European handling of the recent air travel disruption. She added that her organization, ALPA, advocated complete avoidance of volcanic ash until a deeper understanding of engine tolerance was achieved. Better detection mechanisms, more vigorous certification processes, and new procedural training exercises will also help.

Mr. Dinius said that ash clouds had three significant effects on airplane engines: (1) corrosion of compressor blades; (2) plugging of cooling holes; and (3) accumulation on hot parts. He added that GE recommended avoiding flight into visible ash, but further research into ash clouds and their impact on commercial engines could reduce the risk of flying through one.
4.6—SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION

4.6(a)—An Overview of Transportation R&D: Priorities for Reauthorization

February 12, 2009

Hearing Volume No. 111–2

Background

On Thursday, February 12, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to review the research, development, and deployment activities of the Department of Transportation (DOT). The hearing also focused on issues related to the funding, planning, and execution of current research initiatives and how these efforts fulfill the strategic goals of both Federal and State Departments of Transportation, metropolitan transportation organizations, and industry.

There were five witnesses: (1) The Hon. Paul Brubaker, Former Administrator of the Research and Innovative Technology Administration (RITA) at the U.S. DOT; (2) Dr. Elizabeth Deakin, Director of the University of California Transportation Center at the University of California, Berkeley; (3) Mr. Amadeo Saenz, Jr. PE, Executive Director of the Texas Department of Transportation (TxDOT); (4) Mr. Robert Skinner, Executive Director at the Transportation Research Board (TRB); and (5) Mr. David Wise, Acting Director of Physical Infrastructure Issues at the Government Accountability Office (GAO).

Summary

In his opening statement, Chairman Wu expressed his hope that transportation planners would use the latest available technologies and research results in the infrastructure projects planned under proposed economic stimulus funding. He also expressed his concern about a lack of prioritization and coordination in national transportation research and development efforts and how this lack of prioritization and coordination resulted in a less efficient and effective research and development program. Ranking Member Smith noted the timeliness of the hearing with transportation funding in the proposed economic stimulus bill. He stressed the importance of technology transfer to getting the results of research from the lab to the road.

Former Administrator Brubaker opened by noting that he had not been as successful as he had hoped in streamlining the decision-making processes during his tenure at RITA. However, he was satisfied that transparency with respect to research and development funding had improved. Even so, he felt that it is currently “impossible” to ensure that research funds are well used, and he
argued that RITA should have more resources and authority to fulfill its research coordination role per the Mineta Act (P.L. 108–426). He also recommended monitoring the progress and performance of research by metrics agreed to in advance.

Dr. Deakin recommended an outcome-based funding strategy for research that would focus on meeting societal goals, such as increased access to transportation options or reduced congestion. She noted a lack of coordination between government agencies, the academic researchers, and the private sector. In addition, she recommended that University Transportation Centers (UTCs) be awarded via competition, rather than earmarked in legislation.

Mr. Saenz gave several examples of the benefits of transportation research in Texas, noting that his agency estimated a return of five to one for gains in efficiency per research dollar. He urged the Federal Government to provide ready-to-use, documented systems to states and other end-users and repeated the importance of a set of system-wide goals and metrics for transportation research.

Mr. Skinner advocated for the improvement of technology transfer programs, and greater inclusion of stakeholders in major decisions regarding resource allocation for surface transportation research and development. He echoed Dr. Deakin’s support for competitively-awarded research funding and stressed the importance of an intermodal approach to transportation.

Mr. Wise assessed RITA’s progress in implementing 2006 GAO recommendations to strengthen coordination and planning for research and development across DOT. For instance, the agency has improved the coordination, review, and performance measurements of DOT’s research and development programs. He noted, though, that RITA had not developed performance goals to measure its own performance.

Members asked the witnesses to give their thoughts on developing a more coordinated, comprehensive surface transportation R&D program. Mr. Brubaker emphasized the need to lay out clear goals for the research agenda, and require measurable outcomes for funded projects. Mr. Skinner concurred, but noted the enormity and challenge of the task. Dr. Deakin noted that other countries have been more successful in creating metrics for assessing progress.

The witnesses also stated the need to improve technology transfer. Mr. Wu expressed concern that institutional, social, and cultural inertia within the transportation field slowed progress in implementing new ideas and technologies, an observation with which several witnesses agreed. Mr. Saenz noted his positive experience with TxDOT field offices where many different types of professionals work together, fostering more idea exchange and collaboration. Dr. Deakin remarked that much of the know-how for improving organizational structures and partnerships exists in business schools and within the social sciences.

Members also questioned the witnesses about the best mechanism for funding the UTC program. Mr. Brubaker argued that the current, heavily-earmarked system meets the needs of many stakeholders and should not necessarily be changed. In contract, Dr. Deakin, Mr. Skinner, and Mr. Saenz argued in favor of a completely competitive process. However, Dr. Deakin and Mr. Skinner
agreed that many of the earmarked centers are successful, and that earmarks allow universities to strengthen their centers to enable them to compete at a later time. They also noted the important contributions UTCs make to workforce development. Witness opinions were also mixed on the question of the UTC matching requirements. Dr. Deakin and Mr. Brubaker were ambivalent, while Mr. Skinner strongly advocated an increase in the Federal UTC match from 50 percent to 80 percent to allow universities more freedom to pursue basic research.

4.6(b)—Strengthening Forensic Science in the United States: The Role of the National Institute of Standards and Technology

March 10, 2009

Hearing Volume No. 111–8

Background

On Tuesday, March 10, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to review the scientific and technical issues raised by the recently released National Academy of Sciences (NAS) report Strengthening Forensic Science in the United States: A Path Forward. The hearing discussed issues related to the accuracy, standards, reliability, and validity of forensic science, as well as how the expertise of the National Institute of Standards and Technology (NIST) in forensics-related research, developing standards and certified test methodologies, and performing laboratory accreditation may be leveraged to implement some of the recommendations in the report.

There were five witnesses: (1) Mr. Pete Marone, Director of Technical Services at the Virginia Department of Forensic Science; (2) Ms. Carol Henderson, Director of the National Clearing House for Science, Technology and the Law; Professor of Law at Stetson University College of Law; Past President of the American Academy of Forensic Sciences; (3) Mr. John Hicks, a retired Director of the Office of Forensic Services at New York State Division of Criminal Justice Services, and the former Director at the FBI Laboratory; (4) Dr. J.C. Upshaw Downs, Coastal Regional Medical Examiner at the Georgia Bureau of Investigation; and (5) Mr. Peter Neufeld, Co-Founder and Co-Director of The Innocence Project.

Summary

In his opening statement, Chairman Wu noted that the NAS report recommended new standards and accreditation to ensure validity, accuracy, and reliability in forensic science. He said that the report suggests creating a new agency to oversee the forensics discipline, but wondered how much of a role NIST could take in developing new standards as an already-established agency. Ranking Member Smith talked about the important contributions that forensic science make in law enforcement, both in convicting the guilty and protecting the innocent, but noted that continued improvement is necessary.

Mr. Marone, a member of the committee who wrote the NAS report, grouped the 13 recommendations of the report into four cat-
categories: funding, research, standardization, and education. With respect to funding, he emphasized that finances should not be taken away from DNA projects, but rather more money should be given to the other disciplines. As to research, Mr. Marone said that there were two types of research needs: that for experienced-based disciplines (i.e. fingerprints and tool marks) and that for disciplines that are well-validated (i.e. those based on biological or chemical analysis). He said that all laboratories need to be accredited, but pointed out that many already were on their own initiative. Mr. Marone admitted that NIST has expertise in standardization, but he said that NIST does not have all the necessary knowledge that a forensics oversight agency should have.

Ms. Henderson advocated for a three-step approach: immediate action that uses existing federal resources to address scientific standards, interim action to evaluate strategic policy directions and strategies and explore innovative solutions, and a long-term goal of creating a National Institute of Forensic Sciences (NIFS) as envisioned by the NAS report. Ms. Henderson mentioned NIST as an agency that would be well-suited to promote scientific standards and noted that NIST had already contributed to the core science in several areas of forensic science. Ms. Henderson mentioned that Australia has its own NIFS, but it took 20 years to get off the ground.

Mr. Hicks divided the recommendations in the NAS report into four categories: methods development and standardization, laboratory accreditation and quality assurance, research and training, and resource requirements. He said that Congress has already helped the laboratories in the last three categories considerably, but noted that more work needs to be done on methods development and standardization. Mr. Hicks thought that an expanded role for NIST would be the most effective and efficient way to bring about the needed improvements in the forensics community.

Dr. Downs pointed out that many of the recommendations in the NAS report support the need for standardization, specifically with respect to standardization of reports and terminology. He said that the report correctly indicates that NIST should be a partner in setting some of these standards, particularly in areas where its expertise overlaps with what is needed; however, he believes that the day-to-day application of forensic testing should be overseen elsewhere. He does not think that NIST would be the best place for areas such as accreditation and certification.

Mr. Neufeld addressed the cases in which DNA showed that other forensic sciences were incorrect. He said that 20 years before DNA was used in courtrooms, it was the subject of extensive and relevant basic and applied research. Due to this research, DNA analysis has a scientifically-proven method. He argued that other forensic sciences were created largely for law enforcement use, and so they are not nearly as rigorous as DNA analysis.

Mr. Wu highlighted that, according to the NAS report, with the exception of DNA matching, the commonly used forensic tests such as fingerprint analysis, ballistic testing, hair matching, pattern recognition, and paint matching are based more on a worker's experience than on rigorous scientific protocols. He asked the witnesses how sound the science is behind forensic testing. Mr. Marone an-
answered the question by saying that existing methods are valid in some circumstances, but more research is needed. Dr. Downs added that many of the workers learn by experience; however, they do need standardized training. He also made the point that forensic science is often funded by law enforcement agencies, which do not always provide a bias-free environment.

Four of the five witnesses said that an independent NIFS agency should be created, but Ms. Henderson underlined that this should be a long-term goal and that more should be done with the existing infrastructure found at NIST, the National Institute of Justice, the Department of Defense, and the Department of Homeland Security. Mr. Hicks also advised using NIST for many of the forensic science needs. When Chairman Wu asked how much this new agency would cost, or how much was currently spent on forensics in the existing infrastructure, nobody could specify an amount.

4.6(c)—The Role of Research in Addressing Climate in Transportation Infrastructure

March 31, 2009

Hearing Volume No. 111–16

Background

On Thursday, March 31, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to address the research agenda required to mitigate the environmental impact of transportation infrastructure, with an emphasis on climate changes. Witnesses addressed the components of such an agenda and possible implementation strategies.

There were five witnesses: (1) The Hon. David Matsuda, Acting Assistant Secretary for Policy at the U.S. Department of Transportation (DOT); (2) Ms. Catherine Ciarlo, Transportation Director for Portland, Oregon Mayor Sam Adams; (3) Dr. Laurence Rilett, Director of the University of Nebraska Transportation Center; (4) Mr. Steve Winkelman, Director of Transportation Programs for the Center for Clean Air Policy; and (5) Mr. Mike Acott, President of the National Asphalt Pavement Association.

Summary

In his opening statement, Chairman Wu highlighted the progress of national environmental standards—from the mandate of catalytic converters and unleaded gasoline in the 1970's to the now-recognized need to consider the impacts of the transportation system as a whole on the environment. He hoped the witnesses would describe the types of knowledge and tools transportation officials will need to minimize the impacts on climate. Ranking Member Smith stressed the importance of ensuring that the $600 million in DOT surface transportation research funding is aligned with the key objectives and outcomes desired of the transportation system. He also expressed concerns about the potential costs and impacts of a national cap-and-trade system for greenhouse gas emissions and the possible negative effects of a vehicle-miles-traveled based tax system on rural areas like Nebraska.
Mr. Matsuda noted the Administration’s commitment to aggressive action to reduce the impacts of climate change and expressed DOT’s continued work on abating greenhouse gas emissions in the transportation system. He gave an overview of research and development activities at DOT related to this agenda, such as land use planning and automobile fuel economy. He also highlighted the Center for Climate Change and Environmental Forecasting and its recent report on *The Impacts of Climate Variability and Change on Transportation Systems and Infrastructure*.

Ms. Ciarlo described Portland’s efforts to reduce the impact of the transportation sector on the climate, a result of long-term planning and investments. She discussed future plans, emphasizing the need for more data and better models of traffic patterns. For example, to better manage traffic to reduce emissions, planners need better data on vehicle miles traveled, mode choice, and trip patterns. She emphasized the need for basic research to help gather and use this data.

Dr. Rilett addressed the particular challenges of freight traffic. He also testified on the need for more detailed travel data. For instance, many transportation models input average speeds, but these often do not reflect the acceleration/deceleration cycles of individual drivers. The distribution of speeds is often more important than the average speed. This micro-level data will also be useful in simulating and planning Intelligent Transportation Systems (ITS).

Mr. Winkelman reiterated the need for models and tools to allow planners to assess the cost, benefits, and “co-benefits” (such as reduced congestion) of various emissions reduction strategies. He also emphasized that planners need to be able to measure per-capita emissions, as well as measure how emissions change in response to the implementation of different types of infrastructure and transportation policy.

Mr. Acott discussed environmentally sustainable asphalt pavement technology under development or currently being deployed. These include warm-mix asphalt, increased use of recycled asphalt pavement material in fresh asphalt pavements, and porous pavement. He suggested that further evaluation of the performance of these pavements and documentation of their life cycle environmental costs would help accelerate their deployment.

Mr. Wu asked the witnesses to describe more thoroughly the data and information needs cited that would support the reduction of emissions from the surface transportation sector. He also asked the witnesses to clarify what frequently cited “performance measures” related to climate and otherwise actually measure. Ms. Ciarlo and Mr. Winkelstein reiterated the need for data and models to aid in planning and discussed how appropriate metrics are often difficult to define and rely on many different types of data. Mr. Rilett remarked that data is not synonymous with information, but that through well-developed performance measures, data can provide useful information on the performance of the transportation system and the need for comprehensive, measurable metrics to produce useful information.
4.6(d)—The Role of SBIR and STTR Programs in Stimulating Innovation at Small High-Tech Businesses

April 23, 2009

Hearing Volume No. 111–20

Background

On Thursday, April 23, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to examine the role of the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs in supporting innovation at small high-tech firms and how, in turn, this promotes the economic welfare of the Nation.

There were four witnesses: (1) Dr. Robert Berdahl, President of the Association of American Universities; (2) Mr. Jim Greenwood, President and CEO of Biotechnology Industry Organization (BIO); (3) Dr. Sally Rockey, Acting Deputy Director for Extramural Research at the National Institutes of Health (NIH); and (4) Mr. Jere Glover, Attorney and Executive Director of the Small Business Technology Council.

Summary

In his opening statement, Chairman Wu noted that the SBIR and STTR programs were established 25 years ago and very few changes had been made to them. However, in those 25 years, the importance of small high-tech firms to the innovation of products, services, and technologies has increased significantly. He stated that these programs need to be structured so that the Nation gets the greatest return for its investment. In her opening statement, Ms. Biggert discussed her hope that future legislation would further define what a small business is so that the programs are not abused. She expressed her opposition to increasing the percentage of money set-aside for these programs from the agencies’ research budgets.

Dr. Berdahl spoke from the point of view of the universities. He stated that, for the most part, the SBIR and STTR programs are working well as they are currently structured and funded. He thought that the definition of “small business” needs to be changed to include businesses that have venture capital backing. He also suggested a new program that would provide funding to help research discoveries make it to the marketplace.

Mr. Greenwood agreed with Dr. Berdahl that new legislation needs to define small businesses to include businesses that are backed by venture capital. He also noted that legislation needs to redefine the process under which the number of employees is determined and pointed out that, in its current state, the process excludes many companies that should qualify.

Dr. Rockey concurred with the previous witnesses. She emphasized the importance of flexibility in the program.

Mr. Glover spoke from the point of view of a small business and fully supported the SBIR program in its current form. He said that other countries are replicating the SBIR program and that the pro-
gram that will keep America competitive. He suggested more funding for the program.

4.6(e)—Reauthorization of the National Earthquake Hazards Reduction Program: R&D for Resilient Communities

June 11, 2009
Hearing Volume No. 111–32

Background

On Thursday, June 11, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to review the National Earthquake Hazards Reduction Program (NEHRP) in preparation for reauthorization.

There were five witnesses: (1) Dr. Jack Hayes, Director of NEHRP, National Institute of Standards and Technology (NIST); (2) Dr. Michael Lindell, Director of the Hazards Reduction and Recovery Center, and Professor of Landscape Architecture & Urban Planning, Texas A&M University; (3) Professor Thomas O’Rourke, Thomas R. Briggs Professor of Engineering, School of Civil & Environmental Engineering, Cornell University; (4) Dr. Jim Harris, P.E., President, J. R. Harris & Company; and (5) Mr. Kenneth Murphy, Director, Oregon Office of Emergency Management and Immediate Past President, National Emergency Management Association (NEMA).

Summary

Chairman Wu opened the hearing by noting that NEHRP has made significant progress in improving earthquake safety. He then remarked that the Federal Government supported research and development for other types of hazards—such as windstorms, tsunamis, and wildfires—but that much of that research was stove-piped. He advocated for a more coordinated approach to hazard mitigation research and development and supported education programs that encouraged public adoption as a key element of any successful hazard mitigation program. Finally, Chairman Wu stated that in addition to discussing a coordinated approach to federal hazards research and development funding, he hoped to discuss how NEHRP could be improved in the coming reauthorization.

Ranking Member Smith reiterated the importance of earthquake prevention, citing the statistic that there is a 99% probability that the state of California will experience an earthquake of magnitude 6.7 or greater within the next 30 years.

Dr. Hayes reported on the implementation of the changes made to NEHRP in the last reauthorization, including establishing NIST as the lead agency for the program, creating an interagency coordinating committee and an external advisory committee, and requiring a new strategic plan. He noted that the participating agencies have increased their coordination efforts, mentioning that in addition to the high-level interagency coordinating committee, they had also established a new Program Coordination Working Group to assess how well the proposed strategic plan will address gaps needed to fulfill the mission of the program. Dr. Hayes also discussed the
content of the strategic plan and described current work taking place at NEHRP agencies. Such work included advances in earthquake mapping and monitoring, and contributions to earthquake building codes and practices.

Dr. Murphy discussed the active engagement many emergency managers have with NEHRP and recommended better integration of NEHRP in key emergency management activities, such as all-hazard preparedness and encouraging the adoption of mitigation measures. Dr. Murphy cited many of the challenges facing emergency managers, which include handling recurring disasters, such as windstorms, and earthquakes, which are rarer but can be much more devastating. He testified that increasing funding levels and maintaining its singular focus on earthquakes were two of the most important principals for the NEHRP reauthorization. Dr. Murphy discussed some of the important collaborations between the Federal Emergency Management Agency (FEMA) and states in helping citizens prepare for earthquakes, and advocated for improving tools used by emergency managers, such as hazards models and public warning systems.

Professor O'Rourke stated that NEHRP is the “backbone” for seismic protection in the U.S. He noted that the annualized cost of a major earthquake in the U.S. could be $6 billion and tens of thousands of causalities. Professor O'Rourke was complimentary of NIST's leadership and the contributions of the interagency coordinating council in helping to oversee the program. However, he advocated for significantly more funding because many important earthquake hazard mitigation priorities were receiving little to no funding. In particular, Professor O'Rourke focused on a number of important earthquake engineering research areas that could greatly improve the resilience of buildings and infrastructure to earthquakes. Among these, he discussed the need for more focus on “life-lines,” or infrastructure critical to helping a community cope with and recover from an earthquake. Professor O'Rourke also advocated for increased efforts with respect to technology transfer and mitigation measurement. He recommended that more funding from FEMA to state earthquake programs could help meet this goal. Additionally, Professor O'Rourke noted that NERHP was a crucial “incubator” for the technologies and ideas needed to mitigate the effects of other disasters. Finally, he testified that inserting NIST as the lead agency for the National Windstorm Impact Reduction Program could help improve windstorm mitigation efforts, and he suggested that efforts to coordinate or consolidate other natural hazards research and development within the Federal Government should wait until the National Research Council makes recommendations to preserve the research necessary and unique to each hazard, while leveraging common work across all hazards.

Dr. Lindell explained that his remarks were substantially based on the findings of the National Science Foundation's Second Assessment of Research on Natural Hazards and the National Academy of Sciences' Committee on Disaster Research in the Social Sciences. He discussed the role of social science in protecting communities from natural disasters, noting that social scientists seek to understand how different demographic and social factors contribute to vulnerability, test the effectiveness of hazard mitigation programs,
and work with emergency managers and others to improve the adoption of hazard mitigation measures. Dr. Lindell noted that, in the past, NEHRP had supported social science but that the program could make a greater effort to support social science and collaborations between social scientists, physical scientists, and engineers. He also named a number of high priority areas for hazard mitigation social science, such as assessing the vulnerability of different populations and detailing the post-impact actions of communities hit by natural disasters. Finally, Dr. Lindell strongly supported a coordinated, multi-hazard approach to hazard mitigation research and development.

Dr. Harris commented on the improvements in interagency coordination since the last NEHRP reauthorization, noting that the agencies were working together closely to craft a new strategic plan and that FEMA was engaged in productive partnerships with the US Geological Survey (USGS) and NIST on several important projects. He noted that, in order to achieve the strategic plan’s goal of earthquake resilient communities, technology transfer needs to be integral to the program and offered suggestions, such as expanding efforts to identify research needs from the perspective of design professional to increase the likelihood of success for technology transfer efforts. Finally, Dr. Harris addressed the need to increase research and development across all hazards. He offered his opinion that, since wind engineering was less complex than earthquake engineering, researchers focused their efforts on earthquakes even though windstorm damage is a much more frequent occurrence. Dr. Harris said that there was a significant role for the Federal Government in collecting engineering design-related data about all types of hazards, from earthquakes to windstorms to snow loads.

During the question and answer period, the witnesses emphasized the importance of social science in increasing the rate of adoption of mitigation measures. The witnesses lauded NIST’s efforts at coordinating NEHRP activities across the different agencies and recommended that NIST lead any related programs, such as the windstorm program. In addressing other hazards, the witnesses agreed that a multi-agency, NEHRP-like structure could be effective. However, they emphasized that earthquakes are a unique challenge and that NEHRP should not lose its earthquake focus.

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**4.6(f)—Agency Response to Cyberspace Policy Review**

**June 16, 2009**

**Hearing Volume No. 111–34**

**Background**

On Tuesday, June 16, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation and the Subcommittee on Research and Education held a joint hearing to review the response of the Department of Homeland Security (DHS), the National Institute of Standards and Technology (NIST), the National Science Foundation (NSF), and the Defense Advanced Research Projects Agency (DARPA) to the findings and recommendations in the Administration’s 60-day Cyberspace Policy Review.
There were four witnesses: (1) Ms. Cita Furlani, Director, Information Technology Laboratory, NIST; (2) Dr. Jeannette Wing, Assistant Director, Directorate for Computer & Information Science & Engineering, NSF; (3) Dr. Robert F. Leheny, Acting Director, DARPA; and (4) Dr. Peter Fonash, Acting Deputy Assistant Secretary, Office of Cyber Security Communications, DHS.

Summary

In his opening statement, Chairman Wu cited his displeasure with the effectiveness of previous government-funded cybersecurity efforts and their levels of success. Chairman Wu stated that this hearing would highlight the progress of the four Federal agencies tasked with bolstering and maintaining federal cybersecurity standards and what steps are being taken for future improvements. Ranking Member Smith cited both the previous and current Administration’s commitment to the issue of cybersecurity and said that, while there exists a consensus for a strong bipartisan commitment to bolstering cybersecurity both domestically and abroad, the country is still at the earliest stages of doing so and that Congress must balance the haste to find solutions with careful deliberation on the solutions they choose. He wondered if enough effort is being placed on cybersecurity research and development efforts, whether $30 billion dollars is an appropriate amount to invest in cybersecurity, and how we can improve the security of private sector networks as well as public domains. Chairman Lipinski stressed the need for more information sharing between the public and private sectors and the challenges of incentivizing agencies to better address the problems of cybersecurity, as well as deficiencies in the information technology education field. He called for a change in the culture of how Americans practice their computer hygiene and for the formation of a secure and resilient cyberspace for not only the Federal Government, but the private sector as well.

Ms. Furlani said that NIST accelerates the development and deployment of information and communication systems that are reliable, usable, interoperable, and secure. She asserted that NIST is actively engaged with private industry, academia, non-national security federal departments and agencies, the intelligence community, and other elements of the law enforcement and national security communities in coordinating and prioritizing cyber security research, standards development, standards conformance demonstration, and cybersecurity education and outreach.

Dr. Wing said that many cybersecurity measures deployed today capitalize on fundamental research outcomes generated decades ago. NSF agrees with the recent 60-Day Cyberspace Policy Review that a national strategy to secure cyberspace in both the near- and the long-term must include investments in fundamental, unclassified, open, long-term research. Many of the cyberspace security methods used today were developed by the open research community, many with an application in mind other than security.

Dr. Leheny talked about DARPA’s role in cybersecurity research and advancement, and specifically mentioned one program, which develops a National Cyber Range. This range will be a vehicle for significantly advancing progress in cyber understanding and capabilities, serving as a tool for rapid, realistic, and quantitative sim-
ulation assessment of cyber technologies. He also talked about coordinating research with other agencies, noting that—in general—program managers engage with their counterparts in other agencies to scope out the best way forward to achieve a specific research goal.

Mr. Fonash said that DHS leads a multi-agency approach to coordinate the security of federal, civil, and executive branch networks. He said that the United States Computer Emergency Readiness Team (US–CERT) serves as the focal point for the security of federal civil executive branch networks. Agencies report instances to US–CERT, which then provides guidance to agencies on enhancing detection capabilities and works with them to mitigate information security incidents. DHS has also led the Comprehensive Cybersecurity Initiative (CNCI) effort to establish a front-line defense for the federal executive branch. DHS also has plans to deploy EINSTEIN, an intrusion detection system. He said that DHS works with industry and government partners to secure the Nation’s critical infrastructure networks.

4.6(g)—Assessing Cybersecurity Activities at NIST and DHS

June 25, 2009

Hearing Volume No. 111–39

Background

On Thursday, June 25, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to assess the cybersecurity efforts of the Department of Homeland Security (DHS) and the National Institute of Standards and Technology (NIST). The hearing solicited the input of private sector experts on how federal cybersecurity activities can enhance privately-owned critical infrastructure, better monitor federal networks, and more clearly define cybersecurity performance with metrics and success criteria.

There were four witnesses: (1) Mr. Greg Wilshusen, Director, Information Security Issues, Government Accountability Office (GAO); (2) Mr. Mark Bregman, Executive Vice President and Chief Technology Officer, Symantec Corporation; (3) Mr. Scott Charney, Corporate Vice President, Trustworthy Computing Group, Microsoft Corporation; and (4) Mr. Jim Harper, Director, Information Policy Studies, Cato Institute.

Summary

Chairman Wu expressed his continued displeasure with the overall state of cybersecurity efforts at NIST and DHS, despite substantial funding and effort. He reviewed the recommendations made in the Administration’s Cyberspace Policy Review and cited the need for objectives and metrics for cybersecurity performance based upon real-world outcomes. Ranking Member Smith addressed the Committee’s strong position to shape the debate over government cybersecurity efforts through its jurisdiction over NIST and DHS. He further emphasized that, while broad agreement exists over the need for stronger public-private partnerships in these efforts, pre-
Cise details for the future of these relationships remains largely undefined.

Mr. Wilshusen stated that GAO has, over the past three years, consistently reported that DHS has yet to fully satisfy its key responsibilities, including those for coordinating and protecting cyber-critical infrastructures. He highlighted some of DHS’s shortcomings and explained that GAO has made approximately 90 recommendations to assist DHS in addressing these issues, most of which are still not fully satisfied. He said that NIST has developed a significant number of standards and guidelines for information security and assists organizations in implementing security controls.

Mr. Bregman said that Symantec has seen a marked improvement in DHS in their engagement with the private sector; however, the company feels that more can be done by the department and private sector jointly. He said that DHS has also taken a lead role in educating and raising awareness on the issue. Mr. Bregman said that the private sector has not formally been asked to participate in DHS’s global supply chain initiative, despite the fact that much of the supply chain the government cares about is in the hands of the private sector. He feels that NIST’s funding is not adequate and should be increased; he also said that NIST should work with the private sector to ensure agreed-upon standards, protocols, and requirements are accomplished in reasonable timelines.

Mr. Charney thought that DHS should set security control policy articulating minimum cybersecurity baselines, goals, and outcomes, as well as develop processes to exchange and foster implementation of best practices so that agencies can more quickly achieve higher levels of security when necessary. Mr. Charney thought that NIST should create government-wide standards to help agencies meet the security control policy set by DHS. DHS and NIST should develop their goals and standards based on data from outside agencies, which will evolve with the current threats.

Mr. Harper encouraged Congress to keep true critical infrastructure off the public internet. He also mentioned that the Federal Government is a large market actor, and it should therefore use this influence in shaping the market by setting high security standards in its purchases. He said that the liability of products is a more effective way to solve security problems than regulating the market as liability is an open-ended process. Regulating products can be tricky and, when done incorrectly, can distort markets or threaten privacy and civil liberties.

4.6(h)—Reauthorization of the FIRE Grants Program

July 8, 2009

Hearing Volume No. 111–40

Background

On Wednesday, July 8, 2009, the Honorable Benjamin Luján presiding, the Subcommittee on Technology and Innovation held a hearing to examine the Assistance to Firefighter Grant (AFG) and Staffing for Adequate Fire and Emergency Response (SAFER) Grant programs, in preparation for their reauthorization.
There were two panels with a total of seven witnesses. Panel one included: (1) The Hon. Bill Pascrell, Representative of New Jersey's 8th District. Panel two included: (2) The Hon. Timothy Manning, Deputy Administrator, National Preparedness Directorate, Federal Emergency Management Agency (FEMA), Department of Homeland Security (DHS); (3) Chief Jeffrey Johnson, First Vice President, International Association of Fire Chiefs (IAFC) and Chief, Tualatin Valley Fire and Rescue in Aloha, Oregon; (4) Chief Jack Carriger, Stayton, Oregon Fire District First Vice Chairman, National Volunteer Fire Council (NVFC); (5) Mr. Kevin O'Connor, Assistant to the General President, International Association of Fire Fighters (IAFF); (6) Chief Curt Varone, Division Manager, Public Fire Protection Division, National Fire Protection Association (NFPA); and (7) Mr. Ed Carlin, Training Officer, Spalding Rural Volunteer Fire Department, Spalding, Nebraska.

Summary

Mr. Luján opened the hearing by noting the importance of AFG and SAFER to local fire departments and public safety. He expressed hope that the reauthorization legislation could achieve a balance between rural and urban areas, and meet the needs of fire departments in many different areas of the country. Ranking Member Smith emphasized further that these grants provide critical assistance to rural communities.

The Honorable Bill Pascrell discussed his involvement in the creation of the Assistance to Firefighter Grant program in the 106th Congress, and he praised the efficiency and effectiveness of the programs. Mr. Pascrell stated the pressing need for up-to-date fire and emergency equipment in communities and called for Congress to reauthorize the grant programs.

Deputy Administrator Manning discussed the popularity of the grants among fire departments. He also stated that data show a possible correlation between the receipt of grant funding and lower fire-related deaths and injuries in the community and among firefighters.

Chief Johnson advocated restructuring the SAFER program to: offer three-year, rather than five-year, grants; require a 20 percent match for each of the three years rather than an escalating matching requirement; and remove the maximum allowable amount a department may receive per firefighter. Base salaries vary widely from city to city and a cap would prevent a department in a more expensive city from taking advantage of the grants. He stated that both grants should support improved regionalism—departments that consolidate and cover larger populations, while cutting duplication—by raising the cap for larger departments. Chief Johnson urged the establishment of centers of excellence in fire safety research to help conduct research to improve firefighter health and public fire safety. Finally, Chief Johnson recommended giving the secretary of Homeland Security the authority to waive the matching requirements for AFG and SAFER for departments facing extreme economic hardship.

Chief Carriger stressed the importance of the grants to rural fire departments. He also stated that more data, and better means to evaluate the effectiveness of grants, would be helpful in strategic
planning. In support of this, he recommended FEMA support a third Fire Service Needs Assessment. Chief Carriger discussed the need to eliminate the matching requirement for the Fire Prevention and Safety Grants.

Mr. O’Connor acknowledged the benefits of the AFG program, but stated his opinion that current rules and practices skew the awards to favor smaller, rural departments. To remedy this, he called for each type of fire department—career, volunteer, and combination—to receive a minimum of 30 percent of the AFG funding each year. The remaining 10 percent of the funds would be open for competition by all fire departments. He also recommended that Congress raise the maximum allowable grant a department may be eligible for and lower the AFG matching requirement to 15 percent for fire departments serving large populations. He echoed Chief Johnson’s requests for the SAFER program.

Chief Varone spoke about the research conducted by NFPA on the Nation’s need for the fire service and the impact the grant programs have had on alleviating those needs. He argued for eliminating the matching requirement for Fire Prevention and Safety grants, or for a waiver for those facing demonstrated economic hardship, and called for a minimum of five percent of funding to be designated for fire service-based emergency medical services. He then explained that fire prevention is best achieved through education, utilization of the latest technologies, and enforcement of the latest codes.

Mr. Carlin’s testimony described the limited funding typically available for volunteer fire departments. He testified that AFG money is a critical source of funding for equipment and education for volunteer firefighters and that reducing AFG funding puts those departments in peril.

During the question and answer period, Mr. Manning said that the American Recovery and Reinvestment Act of 2009 (P.L. 111–5) and the Supplemental Appropriations Act of 2009 (P.L. 111–32) provided a waiver, similar to the ones that Chief Johnson and Mr. O’Connor were calling for AFG, for SAFER funds for FY2009 and FY2010. The waivers recommended by the panel would likely work in the same fashion, though he admitted that determining criteria for waivers would be difficult.

4.6(i)—The Potential Need for Measurement Standards to Facilitate Research and Development of Biologic Drugs

September 24, 2009

Hearing Volume No. 111–53

Background

On Thursday, September 24, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to discuss measurement science, standard and technology that need to be developed in order to (a) facilitate the discovery and development of biologics, including biosimilars; (b) reduce manufacturing costs for biologics and improve the ability to monitor quality during the manufacturing process; (c) provide tools to shorten the
amount of time needed for the research, development and regulatory approval of biologics; and (d) ensure that patients receive life saving medicines that are both safe and effective.

There were four witnesses: (1) Dr. Anthony Mire-Sluis, Executive Director, Global Product Quality and Quality Compliance, Amgen, Inc.; (2) Dr. Patrick VJJ Vink, Senior Vice President and Global Head of Biologics, Mylan GmbH; (3) Dr. Steven Kozlowski, Director, Office of Biotechnology Products, Office of Pharmaceutical Science, Center for Drug Evaluation and Research, U.S. Food and Drug Administration (FDA); and (4) Dr. Willie May, Director, Chemical Science and Technology Laboratory, National Institute of Standards and Technology (NIST).

Summary

Chairman Wu began the hearing by reflecting on the vital role of metrology in scientific progress and on the Committee’s history of promoting new technologies by addressing their metrology needs. He called for a constructive dialogue with specific regard to how NIST might be able to take a more active role in the biologic drug development process. Ranking Member Smith remarked on the promise of personalized medicine, stressing the importance of strong intellectual property laws as incentives for innovation.

Dr. Mire-Sluis discussed the benefits of strong testing standards for both patient safety and cost-efficiency. Citing the high cost and financial risk of new drug development, he emphasized the importance of maintaining intellectual property protections. He also commended the Committee on its passage of the America COMPETES Act in the 110th Congress.

Dr. Vink addressed the importance of regulatory reform from the perspective of the generic manufacturing industry. Unlike Europe, he noted that the U.S. does not currently have a regulatory pathway for biosimilars, which would allow companies to bypass the expensive clinical trial stage by demonstrating comparability to an approved product. He noted that existing regulations already tolerate a certain amount of “creep” in the makeup of branded drugs, resulting from small manufacturing changes. He proposed that, with NIST’s help, data on the new version and original version might be paired to form regulatory goalposts for generic biosimilars. He further proposed that the FDA might condition a brand’s exclusive rights to a new biologic on its voluntary provision of reference materials to be published for analytical testing purposes by other companies.

Dr. Kozlowski offered a general description of the complexities of biologics, and identified three development challenges that could be overcome with the help of improved measurement standards: the assessment of post-translational modifications; three-dimensional structure; and protein aggregation.

Dr. May spoke about NIST’s expertise in measurement science and outlined areas where that expertise could be applied to biologic drug development, including determining the structural similarity of two drugs and measuring the presence of manufacturing contaminants.

During the question and answer period, Dr. Mire-Sluis and Dr. Vink both reported that their institutions had had positive experi-
ences in working with NIST in the past, and expressed confidence in their expertise. In response to Mr. Smith’s question about the extent of overlap between the FDA and NIST, Dr. Kozlowski and Dr. May suggested that effective collaboration necessitated a certain amount of overlap between the two, particularly given NIST’s lack of regulatory authority.

Mr. Wu asked Dr. Vink whether the lack of an approval pathway in the U.S. pushed Mylan and other generic drug manufacturers to focus their business elsewhere. Dr. Vink confirmed that his company had been more active in biologic drug development in Europe and Japan, but stated that they were optimistic about regulatory changes in the U.S.

4.6(j)—Cybersecurity Activities at NIST’s Information Technology Laboratory

October 22, 2009

Hearing Volume No. 111–59

Background

On Thursday, October 22, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to review recommendations made in the Cybersecurity Policy Review that may be appropriate for the National Institute of Standards and Technology (NIST) and the proposed reorganization of the NIST Information Technology Laboratory (ITL).

There were six witnesses: (1) Ms. Cita Furlani, Director, Information Technology Laboratory, NIST; (2) Dr. Susan Landau, Distinguished Engineer, Sun Microsystems; (3) Dr. Phyllis Schneck, Vice President of Threat Intelligence, McAfee; (4) Professor Fred Schneider, Samuel B. Eckert Professor of Computer Science, Cornell University; (5) Mr. William Wyatt Starnes, founder and CEO, SignaCert, Inc.; and (6) Mr. Mark Bohannon, General Counsel and Senior Vice President, Public Policy, Software & Information Industry Association (SIIA).

Summary

Both Chairman Wu and Ranking Member Smith stated the importance of NIST’s capabilities and expertise in being able to solve the problems of cybersecurity for both the federal government and the public. The witnesses focused on a range of issues regarding the Computer Security Division (CSD) reorganization and the possibility of the division becoming a stand-alone lab within NIST, the importance of legislation that is not geared towards “country-specific government-created technology standards”, and the Administration’s 60-Day Cyberspace Policy Review.

Ms. Furlani stated that NIST focuses on a range of issues other than the protection of federal information technology (IT) systems. These issues include collaboration with other organizations to coordinate and prioritize cybersecurity research, standards development, standards conformance demonstration, and cybersecurity education and outreach activities. She said that NIST has developed security control guidelines for both Federal agencies and private sector systems. NIST has followed the guidelines of the 60-
Day Review and has worked with several government agencies to create a committee geared towards online identity management. NIST has also been involved in developing international standards. Finally, because of the negative feedback on NIST’s plans to reorganize the CSD, NIST has indefinitely postponed its plans.

Dr. Landau commended the importance of the CSD and its research work on cybersecurity. She stressed the importance of NIST in regards to international dialogue where its purpose was to act as an impartial scientific agency. She believes NIST should play a larger role in creating technological standards that would be geared towards protecting privacy online. In addition, Dr. Landau agreed that there had been problems with the recent reorganization plans of the CSD, and she believes that the CSD should be elevated to the level of laboratory.

Dr. Schneck testified that the ITL should work with the US Government in developing international standards on cybersecurity. She believes that innovation, cybersecurity, and international standards are tied together in developing a better strategy to secure systems. NIST, an already world-respected organization in cybersecurity research, can aid in implementing a strategy encompassing these three aspects. In addition, she strongly believes that such legislation does not contain country-specific government-created technology standards for cybersecurity.

Professor Schneider did not support the most recent reorganization plans of the CSD as it would have become difficult to manage and fund. While reorganization to degree is sensible, he believed that the previously proposed plan is inadequate.

Mr. Starnes prefers the term ‘cyber assurance’ over ‘cybersecurity’ as it encompasses both malicious activity and non-malicious activity. He highlighted this because 90% of failures in complex systems result from non-malicious activity. He would like cyber assurance to function in such a way that any interference is deterred. He is an avid supporter of the Security Content Automation Protocol (SCAP), which would ensure such systems are put into place and take a more offensive position to cybersecurity, which he believes is a shortfall in the 60-Day Review.

Mr. Bohannon holds a similar stance to Dr. Landau and advocated for the CSD to become a stand-alone laboratory. He believes that this would allow for the CSD to attain the funds, manpower, and support for its needs. It would encourage NIST to work along with the private sector and political leadership to work in the international arena and prevent the implementation of country-specific laws that would undermine the protection of IT systems from violators.

4.6(k)—Developing Research Priorities at DHS’s Science and Technology Directorate

October 27, 2009

Hearing Volume No. 111–60

Background

On Tuesday, October 27, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a
hearing to review activities at the Department of Homeland Security (DHS) Science and Technology (S&T) Directorate.

There were four witnesses: (1) Mr. Brad Buswell, Acting Undersecretary, Science and Technology Directorate, Department of Homeland Security; (2) Dr. Phil Depoy, Chairman, Homeland Security Science and Technology Advisory Committee; (3) Mr. David Berteau, Senior Adviser and Director, Defense Industrial Initiatives Group, Center for Strategic and International Studies; and (4) Dr. Cindy Williams, Chair, Committee on the DHS S&T Directorate, National Academy of Public Administration; Shapiro Visiting Professor of International Affairs, The Elliot School of International Affairs, George Washington University.

Summary

Chairman Wu began the hearing by thanking the S&T Directorate for increasing its funding for basic research—now 20% of its portfolio—and for creating a 13th Integrated Product Team (IPT), which was a result of a recommendation from a previous hearing. Chairman Wu followed his praise with concern that IPT operations were inconsistent. In addition, he expressed concern over the lack of a comprehensive threat assessment as a foundation for determining research priorities.

Mr. Buswell stated that the S&T Directorate has successfully restructured its delivery of advanced technology so that it is able to respond to its customers’ near-term and long-term technology capability needs. He addressed the concerns regarding risk assessment and stated that the S&T Directorate relies on its customers to incorporate the threat assessment into its research. He highlighted the importance of basic research, discussing its impact on future technology development and encouraging the development of a scientific workforce through the research conducted by their national laboratories and university-based centers. He said that the S&T Directorate’s strategic plan will be updated in the Quadrennial Homeland Security Review so that it will align more with the Office of Management and Budget (OMB) and the U.S. Government Accountability Office (GAO) guidance.

Dr. Depoy testified that the Homeland Security Science and Technology Advisory Committee (HSSTAC) provided a review in 2008 of the S&T Directorate transition projects and IPT structure. HSSTAC concluded that, over the two years of review, the S&T Directorate provided the structure and direction, developed processes to analyze capability gaps, established a customer interface in the IPTs, and expanded the University Centers of Excellence Program for students to perform basic research in Homeland Security concerns. However, the panel also found that the S&T Directorate’s strategy was too broad and not adequate for providing guidance on research topics. Dr. Depoy stated that regardless of some of the program’s shortcomings, IPTs have improved the S&T Directorate.

Mr. Berteau recommended that the strategic plan for DHS stem from a broad homeland security enterprise-wide plan as there is so much of homeland security that is outside DHS, and even outside the federal government. In order to fix the shortfalls of the program, budgets should be built to address the capability gaps in question.
Dr. Williams chaired a panel of the National Academy of Public Administration (NAPA) from June of 2008 to June of 2009 that studied the S&T Directorate. The panel reviewed two distinct strategic plans—an internal plan to guide its own work and a federal-wide plan for civilian efforts to counter chemical, biological and other emerging terrorist threats—and found that they failed to meet federal government standards and did not address long-term goals. In addition, stakeholders were not specific involved in the development of the strategic plans. The panel found that there was much discrepancy in different IPTs with respect to results achieved, customer satisfaction, and process. In addition, the panel found several holes in the basic research portfolio and highlighted that basic research projects were awarded without competition and without scientific peer review.

The questions portion of the hearing was dominated by concerns over the program structure and research capabilities of DHS. Risk assessment was a major topic. Dr. Williams pointed out that risk and threat assessment are crucial to creating and maintaining a functional strategic plan. Mr. Buswell replied that DHS is currently attempting to meet outlined needs with the help of the Quadrennial Review on the S&T Directorate’s strategic plan. Mr. Berteau and Dr. Depoy both emphasized that the strategic plan should be an enterprise-wide effort, not just for the S&T Directorate. Dr. Williams made a few recommendations regarding milestones as a means of review for projects within the S&T Directorate to which Mr. Buswell partially agreed, debating how these milestones should be defined.

4.6(l)—The Research and Development Portfolio Required to Support the Priorities of the Department of Transportation

November 19, 2009

Hearing Volume No. 111–64

Background

On Thursday, November 19, 2009, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing on the components of a surface transportation research and development portfolio to support the U.S. Department of Transportation’s goals of safety, economic competitiveness, environmental sustainability, and community livability. The hearing also addressed the necessary steps for the Department of Transportation to implement its research and development agenda and the most effective practices for ensuring the latest research and development is utilized.

There were six witnesses: (1) the Honorable Polly Trottenberg, Assistant Secretary for Transportation Policy, U.S. Department of Transportation (DOT); (2) the Honorable Peter Appel, Administrator, Research and Innovative Technology Administration (RITA); (3) Mr. Neil Pedersen, Administrator, Maryland State Highway Administration; Vice Chair, American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Highways; (4) Ms. Ann Flemer, Deputy Executive Director, Policy,
Metropolitan Transportation Commission, Oakland, California; Vice Chair, Intelligent Transportation Society of America; (5) Mr. Alan Pisarski, Independent Consultant; and (6) Mr. Robert Skinner, Executive Director, Transportation Research Board (TRB), The National Academies.

Summary

Chairman Wu began the hearing by noting that the Secretary of Transportation's four stated goals of safety, economic competitiveness, environmental sustainability, and community livability were laudable, but expressed concern that the goals lacked specificity and would be difficult to measure. He said that the purpose of the hearing was to better understand the Secretary's definitions for these priorities and discuss the research and development agenda needed to help achieve these goals.

Ms. Trottenberg identified the DOT Office of Policy's role of providing research to support transportation policymakers, and discussed the development of the USDOT's 2010–2015 Strategic Plan, as well as the Secretary's goals for the Department. She noted that research was an important component of each of these goals and briefly discussed one high-level interagency partnership between the USDOT, the Department of Housing and Urban Development, and the Environmental Protection Agency to support the goal of Creating Livable Communities. Ms. Trottenberg also acknowledged that in the past the DOT had not always ensured research was effectively translated into safer and more efficient transportation by policymakers, suggesting that implementation of new technologies was an area that demanded more focus.

Mr. Appel outlined the institutional layout of RITA, which was charged by Congress to coordinate collaborative multi-modal research and development. He then highlighted existing programs and new initiatives that will support the Secretary's four overarching goals, including driver behavior studies, freight coordination surveys, and the development of new types of strong structural materials.

Mr. Pederson identified a number of research needs to support the Secretary of Transportation's four major goals. His proposed research agenda focused on the lack of data and information faced by transportation officials, hindering their ability to meet larger policy goals. For example, Mr. Pederson discussed the need for cost-benefit information to help transportation planners mitigate the impact of transportation projects on the environment and the need to deploy automated data-collection technologies to help assess the impact of traffic safety measures. He also discussed the need for the DOT to support the “full innovation” cycle of research projects from basic research to implementation. As part of this, Mr. Pederson emphasized the importance of engaging in technology transfer activities such as web-based tools to educate transportation professionals. Finally, he recommended against earmarking research funds at the expense of existing projects.

Ms. Flemer discussed the experience of the San Francisco Bay Area, which has set performance targets in fatality rates, commute time, affordability, and emissions goals. Drawing from the Bay Area’s experience in attempting to measure the performance of its
transportation facilities, she recommended that data collection technologies, such as sensors and GPS-based technologies, be uniformly deployed nationwide. She also criticized the DOT for not providing more leadership and assistance to state and local agencies on transportation data collection efforts. Additionally, Ms. Flemer advocated for the Smart Cities and Communities Initiative, a pilot program that would implement “smart” infrastructure, provide real-time information to travelers, and collect transportation data in select test cities.

Mr. Pisarski expressed skepticism about some of the DOT’s major goals and criticized the Department for failing to take a leadership role in data collection needs. He was particularly critical of the Livable Communities goal, arguing that, among other issues, an aging and increasingly specialized workforce was unlikely to transition from driving to alternative modes of transportation. Mr. Pisarski also criticized the DOT for failing to perform assessments of data needs for transportation planners and pointed to a general lack of leadership in coordinating and setting data collection priorities across the modal agencies within DOT.

Mr. Skinner reported on the status of transportation research projects and listed a number of areas that would benefit from increased research, according to findings from expert panels within the Transportation Research Board. He named a number of research areas related to the Secretary’s goals, including comparative lifecycle emissions research on different modes of transportation and alternative taxation programs such as vehicle miles traveled fees.

4.6(m)—Commerce Department Programs to Support Job Creation and Innovation at Small and Medium-Sized Manufacturers

January 21, 2010

Hearing Volume No. 111–71

Background

On Thursday, January 21, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to learn about the challenges faced by small and medium-sized manufactures, as well as entrepreneurs marketing new technology. The hearing also addressed Department of Commerce initiatives to address these challenges and examined how those programs can be made most effective for these enterprises.

There were four witnesses: (1) The Honorable Dennis F. Hightower, Deputy Secretary of Commerce, U.S. Department of Commerce; (2) Ms. Jennifer Owens, Vice President, Ann Arbor Spark; (3) Ms. RoseAnn B. Rosenthal, President and CEO, Ben Franklin Technology Partners of Southeastern Pennsylvania; (4) Mr. Michael Coast, President, Michigan Manufacturing Technology Center.

Summary

Chairman Wu opened the hearing by explaining that the health of the manufacturing sector is crucial to the health of the economy as a whole, but that U.S. manufacturers, even before the recent
economic downturn, faced significant challenges. Chairman Wu stated that, in the face of increasing competition, capitalizing on our research and development efforts would be critical to growing the U.S. manufacturing sector.

Deputy Secretary Hightower identified several high-level priorities for the Commerce Department to improve U.S. economic competitiveness, including tapping the potential of new green and blue industries, expanding exports through trade promotion efforts, and transforming the Department of Commerce into a more integrated, efficient, and effective service provider. In support of these goals, Deputy Secretary Hightower described several new initiatives, as well as the existing Manufacturing Extension Program. These initiatives included the Office of Innovation and Entrepreneurship, which will help set federal policies and programs to encourage high-growth entrepreneurship, and the CommerceConnect program, launched to provide manufacturers with a one-stop-shop for the suite of services the Department of Commerce provides, such as export promotion and research and development partnerships. Finally, Deputy Secretary Hightower praised the success of the Manufacturing Extension Partnership (MEP) program, noting that, for over 20 years, it has delivered $1.4 billion in cost savings annually and $9.1 billion in retained or increased sales. He cited the President’s 2010 budget, which proposed to double MEP funding over seven years.

Ms. Owens noted that her region, Ann Arbor, has been able to weather the financial storm better than others through the strength of the university and the entrepreneurs it fosters. However, she noted that the manufacturing sector, critical to Michigan, was facing extremely uncertain times. She therefore thought that CommerceConnect was a critical program to help guide small manufacturers during the economic crisis. However, she urged the Department of Commerce to utilize existing networks of state and local economic developers. She testified that it would be more efficient for the Department to educate these workers on Commerce services. She noted that existing programs, like MEP, were very successful, and that manufacturers who were able to quickly retool their processes for new products had been better able to handle the economic downturn. Finally, Ms. Owens testified that federal programs were helpful, but that the biggest crisis facing manufacturers in the short-term was a lack of access to capital.

Ms. Rosenthal described the role of Ben Franklin Technology Partners in helping to commercialize new technology and in contributing to the economic health of the region. As an example of this role, she described the Nanotechnology Institute, a partnership between several Philadelphia-area universities and Ben Franklin Technology Partners, that has helped license new technologies and spur start-ups. Ms. Rosenthal also testified about the lack of venture capital funding available to support the early stages of commercialization for new technologies. For that reason, Ben Franklin Technology Partners has helped raise pre-seed capital to fund promising new technologies before they are proven enough to attract venture capital funding. In addition, Ms. Rosenthal offered five guiding principles for redirecting existing federal dollars and updating programs in order to maximize its impact on innovation.
and job creation. These recommendations were: ensure that goals are clear and non-conflicting and that they keep the ultimate objective—economic growth through entrepreneurial innovation—at the forefront; take an approach that is less prescriptive and more receptive to new models and allows program design to be driven by the specific challenges and opportunities at regional, state, and local levels; be flexible in implementation, enabling timely response as conditions change; chose programs that focus on reducing the barriers to collaboration and innovation; and chose designs that catalyze institutional and private involvement and investment over time. She went on to describe how these principles could re-shape existing programs, such as the Economic Development Administration’s University Centers for Economic Development program.

Mr. Coast described the Manufacturing Extension Partnership program and the vital assistance it has provided to Michigan manufacturers. He also provided recommendations to help ensure the success of the CommerceConnect pilot program: the program should have a permanent staff that know the Commerce programs thoroughly, as well as other business assistance programs; each service-providing program at the Department of Commerce needs a designated point of contact that is tasked with addressing CommerceConnect clients’ needs; and CommerceConnect should establish pilot programs in other cities before a full scale program is launched.

4.6(n)—Passenger Screening R&D: Responding to President Obama’s Call to Develop and Deploy the Next Generation of Screening Technologies

February 3, 2010

Hearing Volume No. 111–74

Background

On Wednesday, February 3, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to review the airline passenger screening-related research, development, testing, and deployment activities of the Department of Homeland Security (DHS) Science and Technology (S&T) Directorate, the DHS University Centers of Excellence, the National Institute of Standards and Technology (NIST), and the Department of Energy National Laboratories.

There were four witnesses: (1) Mr. Brad Buswell, Deputy Under-secretary of the Science and Technology Directorate, Department of Homeland Security; (2) Dr. Penrose Albright, Principal Associate Director for Global Security, Lawrence Livermore National Laboratory; (3) Dr. Bert Coursey, Program Manager, Coordinated National Security Standards Program, National Institute of Standards and Technology; and (4) Dr. Sandra Hyland, Senior Principal Engineer, BAE Systems

Summary

Chairman Wu opened the hearing by expressing his disappointment in the lack of attention DHS has paid in the past to public acceptance issues. He cited two reports by the National Academy
of Sciences (NAS), one published in 1997 and one published in 2007, both of which identified the need to pay more attention to public acceptance issues in the deployment of passenger screening technologies. He explained that public acceptance of body-scanning technologies must be assessed and was disappointed that the witnesses’ written testimony did not indicate that their respective agencies had a comprehensive plan for conducting and using effective public acceptance research.

Mr. Buswell explained that DHS S&T’s research and development priorities are primarily driven through their Capstone Integrated Product Teams (IPTs), in which customers and stakeholders have a lead role. Mr. Buswell said that DHS S&T works closely with the Transportation Security Administration (TSA) and other DHS offices to ensure the research the S&T Directorate is conducting has a clear path to deployment. Mr. Buswell also stated that the S&T Directorate uses Community Perceptions of Technology panels that include informed experts from industry, public interest, and community-oriented organizations to identify potential acceptance issues, although he gave no indication as to whether they discussed issues with passenger screening.

Dr. Albright said that the National Laboratories combine computer simulation codes, diagnostics, and an environment where both theoretical and experimental chemists, physicists, engineers, and materials scientists can work together to provide a detailed understanding of the science of energetic materials, their effect on aircraft structures, their impact on existing detection systems at the passenger checkpoint, and how systems might be improved to enhance aviation security. The labs apply this expertise to the needs of the Department of Energy, DHS, Department of Justice, and the Federal Aviation Administration (FAA). As part of that effort, DHS brought three labs together—Sandia, Los Alamos, and Livermore—to create a program called the National Explosives Engineering Sciences and Security Program. This program has included the evaluation and characterization of explosive formulations, the assessment of catastrophic damage, rapid assessment of technical and performance of emerging detection systems and their applications.

Dr. Coursey stated that NIST is involved in measurement standards for a wide variety of detection methods. In each of these areas, NIST is working in collaboration with DHS, industry, academic partners, and end users. Dr. Coursey said that NIST has been involved in a multi-year effort with the Transportation Security Laboratory since 2003 to engage in research that supports standards and measurement needs for trace explosives screening. He explained that, when screening travelers, it is important to deploy technology and processes that provide the highest level of security while keeping the traveling public moving efficiently through checkpoints. To facilitate that, NIST conducts biometric usability studies that help ensure that screening systems are easy, efficient, and intuitive for travelers and inspection agents alike.

Dr. Hyland talked about the reports the NAS published on implementation issues associated with new technologies. She mentioned the 1996 NAS report, which described the technical advances in security screening, the associated legal issues, and the issue of public
acceptance. She said that the study identified four issues most relevant to the public acceptance of technologies: health, privacy, convenience, and comfort. The report noted that this technology would most likely only be accepted if the perceived threat level were high. In light of the recent attempted bombing on Christmas, Dr. Hyland thought it was time to revisit the question of acceptance. The study found that, at the time, there had been very little research of the public acceptance of screening technologies, and when this topic was revisited relative to the committee’s work on the whole-body imagers in 2007, that had not changed. Dr. Hyland said that the best way to gauge public acceptance is through field tests.

4.6(o)—How Can NIST Better Serve the Needs of the Biomedical Research Community in the 21st Century?

February 24, 2010

Hearing Volume No. 111–79

Background

On Wednesday, February 24, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to examine ways in which the National Institute of Standards and Technology (NIST) could better serve the needs of the biomedical community.

There were three witnesses: (1) Dr. Thomas M. Baer, Executive Director, Stanford Photonics Research Center, Ginzton Lab; (2) Sharon F. Terry, MA, President and CEO, Genetic Alliance; and (3) Dr. Daniel Sullivan, Professor and Vice Chair, Research in Radiology, Duke University Medical Center and Science Advisor, Radiologic Society of North America.

Summary

Chairman Wu opened the hearing by explaining the importance of metrology in the biologics industry—better metrology science may lead to better care for patients, better treatment options for doctors, and earlier, more accurate diagnoses of disease. These efforts may also contribute to saving billions of dollars each year in medical costs. He pointed to NIST as an agency that could help develop new, innovative processes to provide service and support to the biomedical industry.

Dr. Baer stated that there has been a technological revolution leading to tremendous progress in the life sciences over the past several decades, and particularly over the last 30 years. He noted that one area in which remarkable advances have been made is in technology that allows for very precise analysis of DNA, RNA, and proteins and that many of these advances were developed here in the U.S. Dr. Baer stated that there are several biotechnology-based industries that depend on these technological advancements, one of which is health care. He explained that NIST is responsible for making sure data obtained in biomedical research is of high quality, and for developing the technology and software to extract from this data the critical elements that can be used in diagnosing diseases. Currently, NIST does not have a life science laboratory focused on the biomedical and healthcare industries or on enhancing
the technology that has evolved over the last several decades through measurement science. He suggested that NIST may want to form a separate operating unit and laboratory focusing on the bioscience and healthcare areas.

Ms. Terry said that she entered the biomedical health care industry because her children developed a genetic-based disease, pseudoxanthoma elasticum (PSA), for which no cure existed. She presented an example of patient-driven translational research based on her experience with PSA. She stated that her research into finding appropriate treatment intervention for PSA has been hampered by current limitations in measurement science. She also noted that diagnosis and screening for this disease are difficult because each provider of biomedical tests and therapies is creating its own system, leading to widespread inconsistencies in biomedical testing for PSA and several other genetic diseases. Even simple tests from one lab cannot always be compared to similar tests from another lab because of a lack of appropriate reference standards. Instead, every manufacturer of diagnostic test kits applies its own standard references and controls. The Food and Drug Administration (FDA) is challenged with ascertaining the accuracy and precision of these technologies based on the manufacturer-supplied standards. Ultimately, the FDA must trust the manufacturers in the absence of any other alternative. Ms. Terry testified that NIST must take a leadership role in creating the standards necessary to integrate new technologies into medicine. She testified that NIST should: create a life sciences infrastructure catalog and distribution system for reference materials and standards for quality assurance for all clinical diagnostic tests; integrate measurement standards and technologies into the FDA regulatory regime; partner with the National Institutes of Health (NIH) on resolving the measurement challenges at the intersection of patient care; and conduct a comprehensive analysis of the life sciences to determine the highest needs for measurement science.

Dr. Sullivan said that it is increasingly clear that the value of medical scans would be significantly greater if radiologists could extract more objective, quantitative information from scans, rather than relying on their subjective, qualitative interpretations. He noted that NIST can be a critical participant to help manufacturers meet this need. Dr. Sullivan testified that NIST needed to develop reference materials, standards, and validation procedures in the biomedical imaging area, especially for computerized axial tomography (CAT/CT) scans, positron emission tomography (PET) scans, magnetic resonance imaging (MRI) scans, and medical optical imaging scans. To determine the metrology needs for the biomedical imaging community, Dr. Sullivan suggested that NIST appoint an advisory board made up of both industry experts and representatives of the imaging device users. A NIST-managed user facility that could be used by industry and academic developers to test their devices under standardized, controlled conditions would be an important asset. Finally, he stressed that there is a critical need for a neutral broker, trusted by the public, to develop an accreditation and performance levels program with associated policies and procedures and that NIST is ideally suited to perform this role.
Background

On Tuesday, March 23, 2010, the Honorable Bart Gordon presiding, the Subcommittee on Technology and Innovation held a hearing to review the proposed re-alignment of operational units at the National Institute of Standards and Technology (NIST), examine the current role that NIST plays in technical standards, and examine the need for Federal agencies and departments' coordination on technical standards.

There were five witnesses: (1) The Honorable Patrick Gallagher, Director, National Institute of Standards and Technology (NIST); (2) Dr. James Serum, President, Scitek Ventures, LLC and Past Chair, NIST Visiting Committee on Advanced Technology (VCAT); (3) Mr. Craig Shank, General Manager, Interoperability at Microsoft; (4) Mr. Philip Wennblom, Director of Standards, Intel Corporation; and (5) Mr. Andrew Updegrove, Partner, Gesmer Updegrove, LLP.

Summary

Chairman Gordon opened the hearing by pointing out that the current NIST lab structure dates from 1988 and the technologies of today are much more multi-disciplinary and integrated in scope and function than they were when the current structure was devised. He looked forward to discussing the role that NIST should play in coordinating federal government standards policy development.

Dr. Gallagher talked about his proposal for reorganizing the NIST labs. Currently, NIST has seventeen line organizations that all report directly to the Director or Deputy Director of NIST. Because of significant turnover in those positions, this is an unstable structure. Dr. Gallagher has proposed to organize NIST senior management by eliminating the current Deputy Director position and replacing it with three Associate Directors—one in charge of the laboratory programs, one in charge of NIST's external programs, and one in charge of management resources. This proposal has already been approved by the Department of Commerce (DOC) and by the Administration and is currently being evaluated by the appropriate Appropriations Subcommittees. Dr. Gallagher has also proposed a reorganization of NIST's laboratories. He believes the labs should be organized by mission, creating a vertically-integrated structure where a single laboratory would be responsible not only for the basic research and development activities, but also for all the components related to delivering products and services of that laboratory to NIST customers. This would make organizations more customer-focused and responsive. Dr. Gallagher's proposal is based on input from the NIST Leadership Team, the NIST VCAT, the DOC, and other NIST and external stakeholders.
Dr. Serum strongly supports Dr. Gallagher’s proposal of the reorganization of NIST. He said that an effective, efficient organization must have clearly defined responsibilities, single ownership of goals, and accountability for achieving results. The reorganization of the labs, as Dr. Gallagher has proposed, would accomplish this goal. Dr. Serum stated that he thought the Director of NIST should hold the rank of Under Secretary as this would bring parity to his peers within the DOC and would allow the Director to participate in all the activities afforded to an Under Secretary. Dr. Serum complemented NIST for its coordination role in the area of Smart Grid, and indicated that this should be used as a model and applied to other areas of national priority where standards development is required.

Mr. Shank stated that effective technical standards can help promote innovation, fuel market growth, and drive corresponding job development. Technology changes rapidly; new standards will enable deployment of new solutions and encourage development of innovative products and services. Cloud computing is becoming more popular. With this new technology come new responsibilities, including the need to protect privacy of users, the security of their data, and to enable interoperability between systems—all areas where standards can play an important role. Mr. Shank believes that Dr. Gallagher’s proposed realignment for NIST will enhance its overall effectiveness in the standards system. He also said that NIST could serve as a convener to facilitate the exchange of information and collaboration among federal agencies on domestic and international standards policy issues.

Mr. Wennblom supports Dr. Gallagher’s proposed reorganization of NIST, and believes these changes should improve management stability and customer orientation.

Mr. Updegrove said that while the cross-sectoral solutions can, and usually do, evolve over time, the urgent challenges such as cybersecurity and the rising cost of healthcare do not permit us the luxury to allow normal market forces to provide timely solutions for such complex multi-disciplinary problems. NIST can play an important role in providing the standards tools needed in such instances. The development and deployment of standards is essential to creating new technologies and new product markets and therefore to jobs creation and maintaining a healthy balance of trade. He argued that we must charge a single agency, NIST, with the role of tracking emerging needs for public-private coordination with marshalling facts and data for lawmakers and the Administration.

4.6(q)—Supporting Innovation in the 21st Century Economy

March 24, 2010

Hearing Volume No. 111–90

Background

On Wednesday, March 24, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to examine factors that drive innovation, as well as those
that impede it. This hearing also discussed the role of the Federal Government in promoting innovation.

There were five witnesses: (1) The Honorable Aneesh Chopra, Chief Technology Officer (CTO) of the United States, White House Office of Science and Technology Policy (OSTP); (2) Dr. Mark Kamlet, Provost, Carnegie Mellon University; (3) Dr. Rob Atkinson, President, the Information Technology & Innovation Foundation (ITIF); (4) Dr. Dan Breznitz, Associate Professor, the Sam Nunn School of International Affairs, Georgia Institute of Technology; and (5) Mr. Paul Holland, General Partner, Foundation Capital.

Summary

Chairman Wu began the hearing by stating that expert economists have found that 50 to 90 percent of U.S. economic growth in the 20th Century, especially after World War II, was attributable to innovation, rather than a growth in immediate economic inputs such as labor and resources. He explained that it was therefore crucial to support the Administration’s recent efforts at spurring innovation. He then said he hoped that this hearing on supporting innovation in the American economy would be the first of several on the topic.

Mr. Chopra noted that innovation is the foundation for durable, sustainable expansion in employment and economic growth. He stated that, while past debates had centered heavily on the appropriate level of involvement by the Federal Government in driving innovation in the private sector, the Obama Administration sought to strike a balance and focus on areas “that only government can provide.” He further explained that this included supporting basic research and associated infrastructure; providing a jump start to innovation in areas of national importance; and setting an open environment for competition and innovation. Mr. Chopra provided a number of programmatic and policy examples in support of these broad ideas. For example, he talked about the Administration’s $130 million plan for Energy Regional Innovation Clusters, greater efforts to promote U.S. exports, and technology research, development, and deployment efforts in areas of national importance, including Smart Grid and Healthcare Information Technology. Mr. Chopra also announced the creation of a new subcommittee of the National Science and Technology Council devoted to providing high-level leadership on technical standards for areas of high national importance.

Dr. Kamlet discussed Carnegie Mellon University’s experiences in promoting technology transfer and entrepreneurship, and offered thoughts on how his university’s experiences might be helpful in the national policy debate about spurring innovation. He explained the importance of the Bayh-Dole Act in promoting the commercialization of university research. Dr. Kamlet then explained his university’s solution to protracted conflicts that arise during negotiations between faculty and universities regarding the intellectual property rights to their inventions, which the university has dubbed: “5% go in peace.” Dr. Kamlet credited this, and several related policies, for having doubled the rate of new start-ups by Carnegie Mellon faculty. He also noted that in addition to attracting existing businesses such as Google and Caterpillar to collaborate
with university researchers, Carnegie Mellon collaborates with regional economic development organizations to create a fertile ground for growth for Carnegie Mellon start-ups. Finally, Dr. Kamlet offered three suggestions from Carnegie Mellon’s experience that could be applicable to national innovation policy: (1) encourage the federal government to provide small, targeted investments to help bridge the gap between the end of basic research and the point where private investment funding can support startup development; (2) identify niche areas for federal science funding where synergy can be created between basic research and technology development that will accelerate commercialization; and (3) establish policies to rejuvenate industry-university collaborations, such as enacting a Bayh-Dole Act equivalent for university-industry collaboration.

Dr. Atkinson testified that, in 2000, the US was the leader among the countries of the Organization for Economic Co-operation and Development (OECD) in a collection of indicators of competitiveness, such as the funding of basic research, the level of education of the population, and the availability of capital to invest in innovation. However, by 2009, the US had fallen to number six in these indicators, mainly because the US had invested in these areas at a slower rate than its competitors. He also stated his belief that the country’s lack of innovation over the past decade contributed to the recent financial crisis because there were not enough good innovation opportunities in which to invest. Dr. Atkinson argued that in order to stem this decline, the U.S. needs a national innovation strategy that will support, among other things, systematic partnerships between industry, academia, and government, as well as funding for commercialization, to encourage innovation. He also emphasized the importance of STEM education in an overall innovation strategy.

Dr. Breznitz offered his views that stimulating and promoting innovation is a critical role of government, and that it is a very different from favoring or promoting specific industries. He noted the importance of experimentation and flexibility in supporting innovation because the markets and products in many cases are not yet defined. Dr. Breznitz stated that a further challenge facing governments in supporting innovation is the globally fragmented nature of production, which makes it difficult to predict how innovation policies will support job growth. Dr. Breznitz suggested that governments must meet three challenges in order to successfully spur innovation: establishing trust between themselves and private actors, coordinating R&D across different institutional actors, and motivating private actors to innovate in a way that contributes to the domestic economy. He then discussed some of the practices of other countries in supporting innovation, from providing funds to private actors in order to research new technologies and create innovation to providing funds to public actors to do the same. He also gave examples of a third governmental role, that of the government acting as a facilitator in creating relationships between public and private sector actors. Dr. Breznitz noted how other nations, such as Israel and Taiwan, had utilized these different approaches, and summarized the impacts of their endeavors.
Mr. Holland explained the mechanisms venture capitalists use to support new companies and new products and services and noted the significant role venture capital has played in creating high-tech industries and major companies such as Intel, Genentech, and Google. He also talked about the significant concentration of venture capital funds in the Silicon Valley area, crediting the region with a strong “risk-taking” culture. Mr. Holland noted that while the availability of venture capital in other areas of the country, like Boston and North Carolina’s Research Triangle, had grown over the last 40 years, the availability of such capital in Asia, Eastern Europe, and South America, has grown significantly in recent years. With the rise of “viable competitors,” Mr. Holland said that his industry saw a need to increase the support for basic research, and for new, innovative programs, such as the Department of Energy’s ARPA-E program. He also urged for greater support of STEM education. Mr. Holland cited the statistic that 25% of venture-backed public companies were founded by immigrant entrepreneurs. He explained that immigration reform that welcomes talented foreigners is critical to US innovation policy. Finally, Mr. Holland discussed the negative impact on the venture capital industry of tax policy that would charge ordinary income tax rates on capital gains and the vital necessity of strong intellectual property protection to the venture capital industry.

4.6(r)—Interoperability in Public Safety Communications Equipment

May 27, 2010

Hearing Volume No. 111–97

Background

On Thursday, May 27, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to discuss the status of a suite of technical standards, known as Project 25, or P25, that are designed to allow digital land mobile radio systems from different vendors to be interoperable.

There were five witnesses: (1) Dr. David Boyd, Director, Command, Control & Interoperability, Science and Technology Directorate, Department of Homeland Security (DHS); (2) Mr. Dereck Orr, Program Manager, Public Safety Communications Systems, National Institute of Standards and Technology (NIST); (3) Dr. Ernest L. Hofmeister, Senior Scientist, Harris Corporation; (4) Mr. John Muench, Director of Business Development, Motorola Inc.; and (5) Chief Jeffrey D. Johnson, President, International Association of Fire Chiefs, and Chief, Tualatin Valley Fire and Rescue, Aloha, Oregon.

Summary

Chairman Wu began the hearing by noting that ensuring interoperable communication equipment for first responders is critical to protecting the safety of first responders and the public they serve. He explained that the purpose of the hearing was to examine the status of the P25 standard needed to ensure that emergency responder radios from different manufacturers will interoperate.
Chairman Wu stated his concern that, after two decades, the entire standard was not yet complete, and that public safety agencies did not realize that equipment labeled as “P25” was not based on a complete set of standards. In addition to addressing the question of the status of the standards, he noted that the hearing would also address conformance testing for these products, for which he stated his strong support.

Dr. Boyd explained that, given the thousands of public safety agencies nationwide and the billions of dollars worth of legacy equipment that these agencies now use, the most practical approach to achieving interoperability for voice and data is to use a “systems-of-systems” approach. However, standards are the key to linking together many disparate systems, and he noted that in the case of voice services for land mobile radios, comprehensive standards are lacking. Dr. Boyd described how, for many of the interfaces that comprise the P25 standard, documents essential for testing the standard had not yet been completed by the standards developers. He stressed the importance of both the testing documents and performing the tests themselves in discovering problems that might interfere with interoperability. It was noted throughout the hearing that the radio manufacturers involved in the P25 standards process opposed more rigorous conformity assessment testing, designed to test the manufacturer’s equipment against the standards. Dr. Boyd testified that DHS and NIST had discovered interoperability problems four years ago while testing radio equipment labeled as P25, and he strongly urged for the inclusion of conformity assessment testing in the DHS Compliance Assessment Program. These conformity tests would ensure that the radios function as intended and that they will interoperate with equipment manufactured in the future.

Mr. Orr gave an overview of the P25 standards development process and NIST’s role in supporting P25 development and testing. He then detailed four issues with P25 that he believed were hampering progress towards interoperability, as well as open competition in the marketplace for public safety equipment. First, only one and a half of the eight interfaces in the suite of the standards needed for interoperability and competition as defined by P25 are complete. Second, as a result of the lack of complete standards, only a fraction of any P25 system purchased today is truly standards based. Third, many public safety agencies believe that when they purchase a system labeled P25 that it is based on a complete set of standards. Fourth, there is no industry-led compliance assessment and certification program. He further explained that the DHS/NIST P25 Compliance Assessment Program (CAP) was developed with the expectation of incorporating the more rigorous conformance assessment testing, in addition to other tests. Mr. Orr testified that industry has opposed the inclusion of such tests, arguing that they are overly burdensome and redundant to other testing required by the CAP. Mr. Orr testified that he believed conformance assessment testing was crucial to ensure that the radios will perform as intended. Therefore, he was pleased to report that over the past two months, industry participants in P25 have expressed more willingness to actively participate in the identification of relevant
conformance tests for the P25 CAP. Mr. Orr hoped to have a fully functional CAP program within two years.

Dr. Hofmeister described the extensive number of P25 standards that had been developed by industry engineers. He argued that while some have accused the P25 process of being slow, it has moved at a similarly deliberate speed as other consensus-driven standards development processes. He also expressed Harris’ belief that since 2005, the P25 standards process was moving at full industry and user support capacity. Dr. Hofmeister further testified that in Harris’ view, the P25 process had made strong progress toward the original goals, citing the completion of the common-air-interface, which allows portable radios from different manufacturers to interoperate, and the fact that there were now over 15 vendors supplying P25 products. Dr. Hofmeister also described the testing manufacturers perform to ensure their products meet the P25 standard and noted that he did not feel that conformance assessment testing would provide any additional assurance to justify the cost to the manufacturers.

Mr. Muench opposed the characterization of P25 as slow or incomplete. He pointed to a plethora of technical documents produced by industry engineers to support and define the P25 standard. He also stated that 70 percent of the U.S. population is covered by a P25 land mobile radio system. Mr. Muench also testified that P25 manufacturers actively interacted with one another to test equipment and ensure interoperability. He noted that Motorola had posted compliance testing results for all of its products to the DHS website, as required by the CAP. According to Mr. Muench, the original goals of P25 had been met (i.e., voice interoperability), but that work continues on standards for new technologies and features. However, he stated that he believed the standards were “functionally complete.” He also described the standards setting process, noting that it was critical to include law enforcement, fire, police, and EMS, as well as industry. Finally, Mr. Muench advocated for Congress to dedicate the D block of spectrum exclusively to public safety.

Chief Johnson explained the importance of P25 to first responders across the country. He noted the progress that participants have made on P25, but called on them to complete the standards and ensure that the radios public safety buy “will indeed work interoperably.” He also offered his vision of the future of public safety communications, which included building a dedicated broadband network that would ensure interoperable mission-critical voice and data communications. To achieve this, Chief Johnson echoed Mr. Muench in calling for the dedication of the D block spectrum for public safety use.
On Thursday, July 1, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to examine the progress of the development of a common framework and interoperability standards for the smart grid and to discuss how standards affect the development of the smart grid and the deployment of smart grid technologies.

There were five witnesses: (1) Dr. George Arnold, National Coordinator for Smart Grid, National Institute of Standards and Technology (NIST); (2) Mr. Mason Emnett, Associate Director of the Office of Energy Policy and Innovation, Federal Energy Regulatory Commission (FERC); (3) Mr. John McDonald, Director of Technical Strategy and Policy Development, GE Energy; (4) Mr. Conrad Eustis, Director of Retail Technology Development, Portland General Electric; and (5) Ms. Lillie Coney, Associate Director, Electronic Privacy Information Center (EPIC).

Chairman Wu began the hearing by discussing the need to upgrade the Nation's 100 year old electricity grid to enable more efficient transmission and distribution of electricity, increase the use of renewable energy, and make the electric grid a more reliable network. He noted that these are the promised benefits of a new “smart grid” technology, and that open technical standards were critical to realizing these benefits. In addition to assessing the progress of the standards process, Mr. Wu also stated that he was interested in progress being made by the smart grid community in addressing privacy and security challenges, as well as international outreach efforts to ensure U.S. leadership in smart grid technologies.

Dr. Arnold described NIST's engagement with industry, government, and consumer stakeholders to help it fulfill its congressionally-mandated responsibility to coordinate the development of standards for the smart grid. He also discussed progress on the three-phase plan NIST launched in April of 2009 to expedite the development and adoption of smart grid interoperability standards. Phase 1, completed in January of 2010 after receiving input from over 1,500 stakeholders, included a high-level reference model, the identification of immediately applicable standards as well as high priority standards gaps, and a description of the strategy to establish requirements and standards for smart grid cybersecurity. Phase 2, formally launched in November of 2009, established the Smart Grid Interoperability Panel (SGIP), based on a public-private partnership model, to guide the development of new standards. Dr. Arnold noted that the SGIP will also help guide Phase 3 of the plan, which will focus on testing and evaluation of the standards. Finally, Dr. Arnold mentioned that the NIST-led cyber-
security working group will publish cybersecurity guidelines for the smart grid in July to 2010 and that his office was actively engaging internationally to highlight the U.S. smart grid framework and encourage the harmonization of standards used in different countries.

Mr. Emnett discussed FERC's role in developing a nationwide smart grid and its interaction with NIST in adopting standards to achieve that goal. To carry out this role, Mr. Emnett noted that, once FERC is satisfied that sufficient consensus exists on a particular standard, it will initiate necessary rulemaking to adopt the standards into regulation. However, he also noted that while FERC may adopt smart grid standards that go beyond its traditional jurisdiction to regulate the sale and reliability of power over crossing lines, its ability to enforce these standards would remain limited. Mr. Emnett also noted the good working relationship between FERC and NIST, saying that where FERC had identified priorities for smart grid standards, NIST had incorporated these into the Phase 1 framework. Finally, Mr. Emnett testified that FERC was hesitant to let the lack of standards hinder deployment of smart grid technologies, and was therefore establishing interim rate policies to encourage adoption and increase the body of knowledge available about smart grid technologies.

In addition to noting that smart grid technologies are essential to addressing our nation's energy demand, security, and environmental challenges, Mr. McDonald discussed the importance of standards and the role of NIST and the SGIP in meeting the need for smart grid standards. Given the need to balance public sector and private sector business, Mr. McDonald stated several principles that should guide the government's engagement in private sector standards activities, including encouraging consensus-based adoption of technical standards, promoting international standards development, utilizing federal R&D to support standards development, and educating stakeholders to accelerate deployment of standards. Mr. McDonald also commented that NIST and the SGIP have gained interest and traction worldwide on the smart grid framework developed in Phase 1 of the NIST smart grid plan.

Mr. Eustis testified that Portland General Electric has been involved in smart grid-related projects since 2001, including by installing new metering technology for renewable energy sources and new equipment to help the utility maintain reliability. Mr. Eustis was supportive of NIST's efforts and testified that the testing phase of the NIST roadmap was the most critical in ensuring the success and adoption of smart grid technologies. He also stated his view that successes for the smart grid in its early phases will be more probable if the focus remains on simple transactions between utilities and their customers, and more feature-rich modifications wait for later. Finally, he identified several high priority standards, including a standardized USB-like socket that would enable demand response programs for home appliances, a standardized method for allowing electric vehicles to charge at the most opportune time, and a standardized method to send and receive electricity usage data across a multitude of applications.

Ms. Coney advocated for the inclusion of privacy considerations in the development of smart grid technologies and standards. She discussed many ways in which consumer privacy could be com-
promised by the flow of data through the power grid, the most seri-
ous of which could threaten the personal safety of individuals and
families by disclosing information about the occupancy of their
homes or their personal habits. She noted that EPIC, along with
other privacy advocacy organizations, had been welcomed by NIST
to participate in generating recommendations for smart grid stand-
ards and cyber security measures. Ms. Coney further noted that
EPIC was pleased by initial efforts on drafting privacy guidelines
and recommendations for the NIST Smart Grid Cyber Security
Guidelines, but that the organization would withhold judgment
until it saw the finalized recommendations.

4.6(t)—Planning for the Future of Cyber Attack
Attribution
July 15, 2010
Hearing Volume No. 111–105

Background
On Thursday, July 15, 2010, the Honorable David Wu presiding,
the Subcommittee on Technology and Innovation held a hearing to
discuss attribution in cyber attacks, and how attribution tech-
nologies have the potential to affect the anonymity and privacy of
internet users.

There were five witnesses: (1) Dr. David Wheeler, Research Staff
Member, Information Technology and Systems Division at the In-
stitute for Defense Analyses; (2) Mr. Robert Knake, International
Affairs Fellow, Council on Foreign Relations; (3) Mr. Ed Giorgio,
President and Co-Founder, Ponte Technologies; and (4) Mr. Marc
Rotenberg, President, Electronic Privacy Information Center.

Summary
Chairman Wu opened the hearing by explaining the importance
of attributing cyber attacks. However, he also expressed his con-
cern about the potential implications of attribution technologies to
personal privacy and anonymity on the internet.

Dr. Wheeler defined the term ‘attribution’ to mean ‘determining
the identity or location of an attacker or an attacker’s inter-
mediary’. He said that there is a concern that if attribution tech-
nologies are developed, governments with abusive human rights
records could acquire these technologies and redeploy them in
order to suppress freedom of speech and democracy movements. Fi-

nally, Dr. Wheeler said that most commercial companies view iden-
tifying attackers as a law enforcement or military task, not a com-
mercial one. Therefore, if a government wants the ability to at-
tribute attacks, it may need to pay for that ability directly, includ-
ing the research and development process.

Mr. Knake said that, for high-end threats, attribution will almost
certainly be possible due to the limited number of actors that pos-
sess the capability to present a national security challenge in
cyberspace. Such an attack would take significant investment of
time, money, and highly-skilled specialists. While technical attribu-
tion may only provide limited evidence of who is behind an attack,
traditional intelligence and law enforcement investigation can
make up the difference. For lower-level threats, Mr. Knake does not support ironclad attribution. He said that cyber criminals would likely be able to maneuver around attribution technologies while average users would experience a near-total loss of privacy. Additionally, attribution technologies would not force foreign regimes to cooperate in investigations. Instead, Mr. Knake advocated for increased accountability in cyberspace. He said that non-cooperation in investigating international cyber attacks should be taken as a sign of culpability. States should be held responsible for securing their national cyberspace and should have an obligation to assist when their citizens or systems within their country are involved in cyber attacks.

Mr. Giorgio said that post-attack attribution is not effective. He recommended the creation of a multi-protocol Internet, where sensitive commercial and financial networks would require transmission using new protocols that have accountability and attribution built into their design. He also said that transparency is important; without it, bad actors emerge. Finally, he said that giving control to a trusted third party is the only way to ensure that private information remains private and that users can remain anonymous. In his opinion, government has not yet earned the trust to perform this role; a lot more transparency and oversight is needed before government can be given that trust.

Mr. Rotenberg expressed his fear that governments could use attribution technologies for purposes unrelated to cyber security. He noted that they could have a real impact on human rights and freedom of expression because attribution can influence individuals considering the expression of unpopular or controversial views. He said that the U.S. has a very strong constitutional right to speak anonymously, and that there has been only one case where an internet identification case has been upheld (for convicted sex offenders in Utah).

4.6(u)—Progress on P25: Furthering Interoperability and Competition for Public Safety Radio Equipment

September 23, 2010

Hearing Volume No. 111–110

Background

On Thursday, September 23, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to discuss the status of the Project 25 (P25) standard, remaining challenges, and explore how the status of P25 affects an array of stakeholders.

There were five witnesses: (1) Mr. Tom Sorley, Deputy Director Radio Communication Services, City of Houston Information Technology Department; (2) Ms. Ellen O’Hara, President, Zetron; (3) Mr. Marvin Ingram, Senior Director, ARINC, Public Safety Communications; and (5) Mr. Russ Sveda, Manager of the Radio Technical Service Center, Department of the Interior.
Summary

Chairman Wu began the hearing by noting that it was the Subcommittee’s second hearing on the interoperability of public safety radios. He summarized the main findings from the previous hearing—mainly, there was disagreement among all of the P25 participants on the progress of the P25 process toward completion and the level of testing necessary to ensure that the equipment is P25 compliant. He then stated that he was pleased to have an opportunity to hear from individuals involved in the building, operating, and testing of public safety radio systems.

Mr. Sorley testified that designing and purchasing a P25 system can be a challenge for a public safety agency, especially small rural agencies with few resources. He said that most public safety officials who write the specifications for a radio system do not know enough about the suite of P25 standards to properly specify their requirements. This lack of understanding can lead to the unintentional purchase of proprietary components for the system. Since radios are hardly ever replaced all at once, proprietary features placed on top of standardized components can significantly limit later attempts to purchase radios or other equipment from different vendors, hindering competition and lower prices in the market for public safety radios. Mr. Sorley recommended the inclusion of more public safety representation in the P25 standards development process to help alleviate this problem. Mr. Sorley also reported on the status of the P25 Compliance Assessment Program (CAP). He stated that while the major manufacturers had shown more willingness earlier in the year to comply with a more rigorous testing program, more recently they had returned to their previous stance against more rigorous conformity assessment tests.

Ms. O’Hara described the P25 Console Subsystem Interface standard (CSSI), which is designed to allow consoles from any manufacturer to interoperate with other hardware in a P25 radio system. However, Ms. O’Hara testified that, currently, only three of the seven P25 radio network vendors are compliant with the CSSI standard. Customers who purchase radios from the other four network vendors are limited to those vendors’ particular proprietary consoles. Ms. O’Hara expressed her concern that competition and customer choice are limited by the slow adoption of the open standards for CSSI. She recommended that the Federal Government set a date within the next twelve months after which it will no longer award grants to purchase P25 networks that are not compliant with the CSSI standard. Ms. O’Hara also expressed Zetron’s support for more rigorous testing.

Mr. Ingram offered three main points in his testimony: standards drive innovation and competition in any marketplace—technology is not a barrier to finalizing P25 standards—and finalizing communications standards and adoption of compliance and conformance testing are imperative to fully solving the interoperability problem. Mr. Ingram said that more manufacturers are making P25-compliant equipment. However, manufacturers that offer complete P25 networks are not offering completely standards-based systems. Mr. Ingram also noted that vendors of proprietary systems have taken advantage of the delay in the development of standards, and thus competition has been stifled. Mr. Ingram was also a proponent of
more rigorous testing to ensure that all products are manufactured to the standard.

Mr. Sveda said that the Department of the Interior adopted the P25 standards in 1996 and has designed and installed its own systems with P25 compliant components since then. Even though the Department has invested 14 years in this technology, they are still unable to install a P25 compliant system without significant engineering and customization.

4.6(v)—Standards for Health IT: Meaningful Use and Beyond

September 30, 2010

Hearing Volume No. 111–112

Background

On Thursday, September 30, 2010, the Honorable David Wu presiding, the Subcommittee on Technology and Innovation held a hearing to examine the progress by the Department of Health and Human Services (HHS), the National Institute of Standards and Technology (NIST), and non-governmental health information technology (IT) stakeholders in establishing standards for health IT, providing guidance for their implementation, and creating a mechanism to certify that health IT products comply with the established standards.

There were five witnesses: (1) Dr. David Blumenthal, National Coordinator for Health Information Technology, Office of the National Coordinator (ONC), HHS; (2) Ms. Kathleen M. Roberts, Associate Director for Federal and Industrial Relations, Information Technology Laboratory, NIST; (3) Ms. Joyce Sensmeier, Vice President, Informatics, Healthcare Information and Management Systems Society; (4) Dr. Dick Gibson, President, Oregon Health Network; (5) Ms. Deven McGraw, Director of the Health Privacy Project, Center for Democracy and Technology; and (6) Ms. Deb Bass, President and CEO, Bass & Associates, Inc.

Summary

Chairman Wu opened the hearing by saying that, although many people take for granted the ability to share information quickly and seamlessly, the health care industry is still surprisingly paper-based and largely unaided by IT. He noted that IT has implications for both lowering the cost and raising the quality of health care. Chairman Wu hoped the witness could provide an update on the implementation of the health IT standards development requirements of the HITECH Act and also offer insight into areas in need of improvement. Ranking Member Smith added that many citizens seek health care across state lines, and so access to these patients’ Electronic Health Records (EHRs) is necessary both close to home and out of state.

Dr. Blumenthal said that since the HITECH—Health Information Technology for Economic and Clinical Health—Act passed in February 2009, HHS has established two new federal advisory committees, completed three rulemakings with the Center for Medicare and Medicaid Services, and strengthened coordination
throughout the Executive Branch of health IT. The HITECH Act established the Health IT Policy and Standards Committees, which issued recommendations on the development and maintenance of specific vocabularies to improve interoperability and formed an interdisciplinary privacy and security Tiger Team of experts. This Tiger Team has provided valuable guidance to ONC and HHS on privacy issues. With the advice of these committees and external consultation, ONC completed three independent rulemakings to implement meaningful use stage 1: the first rule established the EHR incentive program and defined meaningful use stage 1; the second defined EHR standards, implementation specifications, and certification criteria to support meaningful use; and the third established a temporary certification process. HHS has already authorized three certification bodies.

Ms. Roberts said that NIST has been collaborating with industry and others to improve the health care information infrastructure since the 1990s. While health IT standards development is strengthened by an open process for both the public and private sector, it is hampered by the fact that many standards development organizations are working in parallel to provide standards. This can sometimes lead to conflicting, overlapping, or redundant standards. NIST testing activities reduces the cost of developing IT systems by accelerating the standards development efforts and ensuring that standards are implemented correctly. Under the temporary health IT certification program, testing organizations authorized by ONC will use the NIST tests to evaluate EHR software and systems so health care providers have confidence in the systems they purchase. In addition, NIST is advising ONC on the process by which testing organizations will be authorized to test and certify the EHR systems. Current priority areas include security standards, usability standards, and medical device interoperability standards.

Ms. Sensmeier voiced three areas of concern with the process under the HITECH Act. First, data transport and basic security are areas where selective standards are necessary for achieving interoperability. Under the current process, EHR vendors will be forced to support all available transport methods or risk developing software that may not meet future interoperability needs. Second, selecting multiple standards for the same criterion is problematic. Currently, vendors and providers are forced to choose to either support one standard or support them all, which can be costly. Third, the timing of identifying and selecting the standards in subsequent rules is important. To ensure optimal software development and testing, the final rules for meaningful use and standards should be available 18 months before the next stage. Ms. Sensmeier recommended that HHS publish implementation guidance for all selected standards; publish standards for data transport, financial transactions, security, and health information exchange; publish the process and schedule for harmonizing standards; and set up one repository for access to all standards and implementation guides.

Dr. Gibson said that the meaningful use final rule has been well-received by health care providers. However, more standards are needed, including one that transmits provider text notes and one
that exports and imports patient information directly between EHRs. He also called for a complete directory for health Internet addresses so that providers could send encrypted information directly to future providers and emergency departments could locate data from patient's previous providers. He said that EHRs need to be able to accommodate providers still on paper records. Finally, Dr. Gibson said that providers need an EHR functionality requirement for quality measure reporting and a national model for patients' privacy consent.

Ms. McGraw voiced her concern with the problems associated with securing patient's privacy while using EHRs. She said that HIPAA—the Health Insurance Portability and Accountability Act—contains privacy and security regulations, but because EHRs change the way health information is exchanged, additional regulations are needed. She admitted that the HITECH Act did advance the security of information, but said that there are still gaps to address. A recent survey of large health care organizations indicated that fewer than half of these organizations conduct the annual risk assessment required by HIPAA's security rule. She also stated that the HIPAA security rule is extremely flexible in that it does not require particular functionalities. Finally, she said that while meaningful use requires a risk assessment where the functionalities are defined, regulatory bodies are not clear with providers about using them.

Ms. Bass said that three areas contributed to Nebraska’s success in achieving meaningful use: extensive and persistent stakeholder engagement, physician engagement, and sharing knowledge among states. She urged the ONC to use this success as guidance for other states.
Appendix
March 13, 2009

The Honorable John Spratt
Chairman, Committee on the Budget
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

Pursuant to the provisions of clause 4(f) of House Rule X of the Rules of the House of Representatives for the 111th Congress and Section 301(d) of the Congressional Budget Act of 1974, as amended, I am transmitting the Views and Estimates, including Additional and Minority Views, of the Committee on Science and Technology for FY2010. In addition, I am transmitting recommendations to comply with Sec. 321 Oversight of Government Performance as required in the FY2009 Budget Resolution.

Sincerely,

Bart Gordon
Chairman

 Enclosure

cc: The Honorable Ralph Hall, Ranking Member, Committee on Science and Technology
The President released a summary of the FY10 budget request on February 26, 2009. The Committee is very pleased that the budget summary recognizes the benefits that science and technology and research and development investments have for our country’s economic competitiveness, energy security, job growth, and environmental health. The Committee notes that many of the priorities proposed in the budget summary are consistent with those outlined in two of the Committee’s major authorizing bills signed into law during the 110th Congress—the America COMPETES Act (P.L. 110–69) and the Energy Independence and Security Act of 2007 (P.L. 110–140). In addition, many of the priorities in the budget summary build upon the science and technology funding that was provided in the American Recovery and Reinvestment Act (P.L. 111–5). The Committee looks forward to reviewing the detailed budget request later this spring. The following are the Committee’s views on key priorities in the budget summary related to programs within the Science and Technology Committee jurisdiction.

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

The budget provides $18.7 billion for NASA in FY10. The FY09 omnibus appropriations bill provided $17.8 billion and the Recovery Act provided $1 billion. The budget summary is generally consistent with the priorities of the NASA Authorization Act of 2008 (P.L. 110–424), including support for Earth science and climate change monitoring; human and robotic space exploration; completion of the International Space Station; aeronautics research to transform the air traffic control system and support more efficient aircraft; and retirement of the Space Shuttle in 2010, with the possibility of one additional flight. However, further details will be needed to better assess the Administration’s specific budget priorities for NASA.

The Committee believes that NASA should continue to engage in the most cutting-edge research and serve as inspiration for the next generation of scientists and engineers. To do this, NASA will need the resources to fulfill each of its diverse missions—space exploration, science, aeronautics research and development, and education. The Committee plans to move a multi-year NASA reauthorization this year to further direct and balance the agency’s programs.

**National Science Foundation (NSF)**

The budget provides $7 billion for NSF in FY10. The omnibus provided $6.5 billion and the Recovery Act provided $3 billion for the agency. The budget increases support for high-risk, high-reward research; early-career researchers through the Graduate Research Fellowship and Faculty Early Career Development programs; partnerships between two-year colleges and the private sector to train science and engineering technicians; and climate change research and education.

The Committee notes that since its creation in 1950, NSF has been tasked with strengthening science, technology, engineering and mathematics (STEM) education at all levels. NSF’s education programs are unique in their peer review processes, their linkage to higher education, and their resulting capacity to develop new and improved educational materials and assessments, create better teacher training techniques, and move promising ideas from research to educational practice. In particular, the Committee supports robust funding for the Robert Noyce Teacher Scholarship Program, which is helping to recruit and train the next generation of K–12 STEM teachers by providing scholarships for students to earn a degree in a STEM field while learning content-oriented pedagogy and following a streamlined path toward teacher certification. NSF is also uniquely positioned to help broaden participation in STEM fields at all levels, in particular through institutional capacity building grants and grants that integrate research and education.

**Department of Energy (DOE)**

The budget provides $26.3 billion overall for the Department of Energy in FY10, and notes that the budget request will support:

- Significant increases in funding for basic research and world-leading scientific user facilities to support transformational discoveries and accelerate solutions to our Nation’s most pressing problems—including the development of clean energy;
The transition to a low-carbon economy through increased support of the development and deployment of clean energy technologies such as solar, biomass, geothermal, wind, and low-carbon emission coal power;

Smart grid technologies and other investments to modernize and enhance the electric transmission infrastructure to improve energy efficiency and reliability; and

Early commercial deployment of innovative, clean energy technologies through loan guarantees.

The Committee is pleased that the budget supports these areas, including increased funding for the DOE Office of Science (in addition to the $4.8 billion provided in the omnibus and $1.6 billion provided in the Recovery Act) to: improve our understanding of climate science; continue the U.S. commitment to international science and energy experiments; and support graduate fellowships that will train students in critical energy fields. In addition, the Committee supports the Administration’s goal of accelerating research, development, demonstration, and commercialization of clean energy technologies and the Administration’s call for increased investment in carbon capture and storage (CCS) technologies (in addition to the $3.4 billion provided in the Recovery Act and additional funds provided in the omnibus for coal and CCS).

The Committee also agrees with the budget increase for “promising but exploratory and high-risk research proposals that could fundamentally improve our understanding of climate, revolutionize fields of science, and lead to radically new technologies.” Along these lines, the Committee strongly supports aggressive implementation of the Advanced Research Projects Agency for Energy (ARPA-E) at DOE. As recommended by the National Academies and authorized in COMPETES, ARPA–E will be tasked with high-risk, high-reward energy technology development, especially research that is too cross-cutting or multi-disciplinary to fit into the current DOE stovepipes. ARPA–E will bring together the best and the brightest from all sectors—national labs, academia, and the private sector—give them resources and autonomy, and get bureaucracy out of their way. The omnibus and the Recovery Act provided a total of $415 million for ARPA–E. The National Academies recommended that the program grow to $1+ billion annually.

National Institute of Standards and Technology (NIST)

The budget supports investment in our country’s economic competitiveness by promoting innovation in U.S. manufacturing and advancing science, standards, and technology at the Department of Commerce. Given that, as the budget summary notes, manufacturing employment has hit a 60-year low, the Committee is pleased that the budget supports small- and medium-sized businesses through $125 million for the Manufacturing Extension Partnership (MEP) and $70 million for the Technology Innovation Program (TIP) in FY10. Both of these programs were consistently reduced or zeroed-out by the previous Administration despite both programs’ strong record of creating jobs and providing a large return on investment.

The Committee also supports FY10 funding for NIST research and facilities at the levels authorized in COMPETES.

National Oceanic and Atmospheric Administration (NOAA)

The budget prioritizes prediction and monitoring of weather and climate at NOAA, providing $1.3 billion to fund the development and acquisition of weather satellites and climate sensors. The omnibus provided $966 million and the Recovery Act provided $600 million for these activities. The Committee is encouraged that funds are provided to restore several climate sensors; expand the computing capacity NOAA needs to maintain the continuity of climate data records; and develop more refined models to project climate change impacts at a more refined scale.

In addition, the Committee is pleased that the budget summary notes the importance of funding to “advance climate and ocean research, including efforts to understand and monitor ocean acidification.”

Department of Transportation

The budget notes that the Administration plans to work with Congress to reform surface transportation programs to make investments in a more sustainable future. The Committee supports this goal and plans to move legislation this year to restructure and refocus surface transportation research and development programs to better address congestion, maximize energy efficiency, and reduce environmental impacts.
The budget provides $800 million for the Federal Aviation Administration (FAA) to support the Next Generation Air Traffic Control System (Next Gen), a long-term effort to improve the efficiency, safety, and capacity of the air traffic control system. The Committee strongly supports Next Gen, including both the FAA and NASA research and development components of the program. The Committee's position on the FAA component of Next Gen is included in HR 915, the FAA Reauthorization Act of 2009.

Department of Homeland Security (DHS)

The budget provides $355 million to enhance cybersecurity technology research and development and make private and public sector cyber-infrastructure more resilient and secure. The Committee has long been at the forefront of addressing cybersecurity issues, which only grow in importance as more and more of our infrastructure and economy are dependent on computers and the Internet. The Committee looks forward to reviewing further details of the Administration's plans in this area.

The Committee also plans to move legislation this year to ensure that DHS aligns its research priorities with the most critical threats and homeland security needs and ensures that the technology developed meets reliable testing and evaluation standards as well as the needs of end-users. The Committee expects to include in these efforts research on technologies such as unmanned aerial vehicles and tunnel detection to improve border security.

Environmental Protection Agency (EPA)

The budget provides $3.9 billion for research, regulation, and enforcement at EPA, a significant increase compared to previous years. In recent years, the Committee has noted the need for increased funding for research and development at EPA to ensure that regulations are scientifically sound and cost effective. The EPA Science Advisory Board has also recommended increased budgets for the Office of Research and Development since 2005. The Committee is encouraged by the proposed increase and would expect that this budget level will allow for funding of initiatives such as the assessment of the health and safety of nanotechnology products, developing clean-up standards for methamphetamine contamination, and assessment of the impacts of climate change on society and ecosystems.

Small Business Innovation Research

The budget summary does not specifically reference the Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) programs. However, the Committee believes these programs are another important tool to promote economic growth, job creation, innovation, and the commercialization of new technologies into the marketplace. The Committee plans to move legislation similar to HR 5819 from the 110th Congress to increase investment in these programs and refocus that investment to better meet the needs of small businesses in emerging industries.

Department of State and International Programs

The budget provides additional funding for key programs that advance U.S. foreign policy goals, including funding for energy initiatives and programs addressing global climate change. The Committee recognizes the need for better coordination of international science and technology efforts to better leverage both the expertise and resources throughout the world to address global challenges (such as energy and climate change, among others) and the diplomatic benefit of international science and technology activities. The Committee plans to move legislation on this issue and looks forward to seeing a more detailed budget request to support these activities.

SEC. 321 OVERSIGHT OF GOVERNMENT PERFORMANCE

Under Sec. 321 of S. Con. Res. 70 (the FY2009 Budget Resolution), committees were directed to review programs within their jurisdictions to root out waste, fraud, and abuse in program spending.

In the 110th Congress, the Science and Technology Committee reestablished the Subcommittee on Investigations and Oversight to help identify instances of waste, fraud, and abuse that could create savings for the Federal taxpayer.

During the past two years, the Committee has run a very aggressive, wide-ranging oversight operation. House Rule X sets the Committee's jurisdiction, but the leg-
The legislative jurisdiction assigned to the Committee is narrower than the oversight jurisdiction. Rule X also assigns the Committee special oversight responsibility for “reviewing and studying, on a continuing basis, all laws, programs, and Government activities dealing with or involving non-military research and development.” The Committee appreciates the special function entrusted to it and will continue to tackle troubled programs and search for waste, fraud, and abuse in non-military research and development programs regardless of where it may be found.

In the last Congress, the Committee collectively authored almost 250 oversight letters and held 80 oversight hearings. The Committee is committed to building on this record in the 111th Congress. The Committee also routinely works with GAO and the Inspectors General of our agencies to maintain detailed awareness of the work of those offices. Currently, the Committee has 30 accepted requests for work pending with GAO and more will be developed over the coming months.

Government waste and contractor abuses were an important focus of the work of the Committee during the 110th, and this area will gain renewed attention in the 111th. In the 110th, work by the Committee led to Appropriations reductions of $17.8 million with another $11.5 million in Federal property identified for reclaiming from a contractor. The Committee also identified a program that had misspent hundreds of millions of dollars during a computer acquisition; that program has since been significantly restructured. Finally, the Committee has been working with GAO and other Committees to instill rigor and transparency into the proposed acquisition of new radiation portal detection monitors; that work has kept between $2 billion and $3 billion from being committed to acquiring immature and unproven technologies.

The Committee has also kept pressure on NOAA to rein in contractor costs and improve performance in the acquisition of next generation weather and climate satellites, which have experienced a multi-billion dollar cost overrun. It is hard to calculate the savings that come from the Committee’s work in this area, but it is likely that without this oversight, the cost overruns would be even higher.

In the 111th Congress, the Committee will expand its work on identifying contractor abuses and cost savings by undertaking a wide-ranging review of contracts let by our agencies in the past few years. The Committee will be looking for specific instances of abuse and lessons on how to better manage contract competitions and awards so that taxpayers know their money is being well spent.

List of Signatures
3. Rep. Lincoln Davis
15. Rep. Marcia Fudge
17. Rep. Parker Griffith
22. Rep. Alan Grayson
It is important that we continue to make appropriate investments in science and technology research, development, and math and science education in order for the United States to remain a world leader in competitiveness and innovation. While Committee Republicans agree with the Majority that the Administration’s budget summary “recognizes the benefits that science and technology and research and development investments have for our country’s economic competitiveness, energy security, job growth and environmental health,” we are also mindful that in the current economic environment, the nation faces numerous and difficult budgetary decisions that will require our careful consideration, diligent oversight, and appropriate action.

We are pleased that the budget summary continues to build on the American Competitiveness Initiative and the America COMPETES Act (COMPETES) (P.L. 110–69) by keeping America on track to double the funding for physical sciences and engineering at the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST), and the Office of Science at the Department of Energy (DOE), but have some concerns that the Administration may be accelerating this funding beyond authorized levels. While we were disappointed that the House Leadership and Appropriators did not adequately fund these agencies in the FY08 Omnibus (P.L. 110–161), we are skeptical about the unprecedented amounts currently being appropriated and the rate at which this is occurring, with no oversight. The Administration considers the $5 billion “investment in key science programs” included in the American Recovery and Reinvestment Act (Stimulus) (P.L. 111–5) to be a “significant down payment” toward doubling the funding for NSF, NIST, and DOE Office of Science, in addition to the full-year amounts requested in the FY09 Omnibus. There are only 6 months left in FY09.

The Administration’s budget summary offers only the overall budget request amounts for each agency and provides a brief narrative on Administration policies, which gives some limited guidance for NSF and NASA. Unfortunately, we do not have top line budget numbers for the National Oceanic and Atmospheric Administration (NOAA), NIST, DOE Office of Science and a number of other Science and Technology Committee jurisdictional areas such as the Department of Transportation research and development, the Office of Science and Technology Policy, the U.S. Fire Administration, and interagency programs such as the National Nanotechnology Initiative (NNI), the Networking Information Research and Development program (NITRD), or the Earthquake Hazards Reduction program.

Along with the Majority, we look forward to receiving a more detailed budget request.

National Aeronautics and Space Administration (NASA)

The Committee has sought to enable NASA to succeed as a multi-mission agency in carrying out the goals expressed in the NASA Authorization Act of 2008 (P.L. 110–422). In general, Committee Republicans concur with the Majority that the Administration’s budget seems consistent with the priorities of the NASA Authorization Act of 2008, including retirement of the Space Shuttle following completion of the International Space Station and one additional flight to deliver the Alpha Magnetic Spectrometer. We applaud the Administration’s reaffirmation of NASA’s initiatives to return humans to the Moon by 2020 as part of a robust space exploration program, while also stimulating the private-sector to develop and demonstrate commercial crew and cargo delivery services to the International Space Station. We are encouraged that the Administration’s budget provides $18.7 billion for NASA in FY10. However, additional details are needed to adequately evaluate the Administration’s goals and intent. For example, it is unclear whether the “new space flight systems for carrying American crews and supplies to space” is the Constellation System already under development. With Constellation, NASA is in the midst of a once-in-a-generation development of a new human launch system. This is the largest launch vehicle development since the beginning of the Space Shuttle program, with the added requirement of being capable of safely returning humans to the Moon. We are concerned that the flat funding profile in the Administration’s out year projections may be unrealistic for such a large scale development effort without jeopardizing NASA’s ability to successfully accomplish its portfolio of missions.

We also endorse the Administration’s commitment to modernize our nation’s air traffic control network by allocating $800 million to the Next Generation Air Trans-
This multi-agency program, led by the FAA and NASA, requires a high level of research, development, and validation to ensure mission success. A robust, safe and efficient air transportation system, capable of handling three-times current traffic levels, is fundamental to promoting economic growth as well as maintaining our quality of life.

National Science Foundation (NSF)

The FY10 budget request for NSF is $7 billion. This is $1.1 billion less than what was authorized in COMPETES; however, NSF also received $3 billion in the Stimulus and is slated to receive another $6.5 billion in the FY09 Omnibus for roughly a six-month period. Committee Republicans support a robust budget request for NSF, but remain concerned that we not exceed current authorization amounts. We hope to see FY10 increases spread across all of the research fields NSF supports in the more detailed budget.

With regard to education, we agree with the Majority that NSF has an important and unique role to play in strengthening science, technology, engineering, and mathematics (STEM) education at all levels. We further agree with the Majority that the FY10 budget should provide, to the extent practical, sufficient funding for the Robert Noyce Teacher Scholarship Program in order to achieve the goals set out in COMPETES. We note that the budget summary highlights the Advanced Technological Education program (ATE) and the Graduate Research Fellowship and Faculty Early Career Development programs, all programs that were also emphasized in COMPETES, but fails to mention the COMPETES-authorized Math and Science Partnerships program (MSP).

The budget summary makes climate change research and education a priority. We note that NSF currently funds numerous research and education programs that address climate change.

Department of Energy (DOE)

In general Committee Republicans agree with the Majority’s views on the budget summary for the DOE. However a majority of us in the Minority continue to be opposed to the establishment of an Advanced Research Projects Agency for Energy (ARPA–E). Those of us in opposition maintain the view that creating a new agency to do work that is currently being done at the DOE is not a justified use of the limited funds available to the Department, and we support the Department’s previous decision to not establish ARPA–E, but to engage in ARPA–E-type projects within the current DOE structure.

We also express our deep disappointment that the President’s budget summary proposes to repeal the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Program that was established in Section 999 of the Energy Policy Act of 2005 (P.L. 109–58). Section 999H(a) sets the funding for this program at a level of $50-million-per-year provided from Federal lease royalties, rents, and bonuses paid by oil and gas companies—not taxpayers. It should be clear that the overall program was initiated and carried out to reach energy known to exist in the areas targeted—energy that was impossible to produce without new technology—and that the required technology would be eventually paid for from the energy captured. The funds are to be directed towards research specifically targeting four areas: ultra-deepwater resources, unconventional natural gas and other petroleum resources, technology challenges of small producers, and research complementary to these areas. While we are wholly supportive of research into renewable and alternative forms of energy, we feel that domestically produced oil and natural gas will continue to play an important role in powering our country and must therefore receive support to increase our domestic supply and reduce our foreign dependence.

The budget summary appears to focus solely on coal within the area of fossil energy research and development. We are pleased that research into carbon capture and storage is playing a prominent role in the budget summary, but we encourage the Budget Committee to continue to recognize the importance of oil and natural gas research and development to our country’s future.

We note the President’s proposal to scale back the Yucca Mountain program to “those costs necessary to answer inquiries from the Nuclear Regulatory Commission” and hope that this announcement and decision does not have a detrimental effect on building new nuclear plants in the United States, but would rather expedite research and development into reprocessing of spent nuclear fuel and the next generation of nuclear plants. Nuclear energy is just the type of clean energy technology that will reduce dependence on foreign oil that President Obama talks about in his budget blueprint.
National Institute of Standards and Technology (NIST)

The Department of Commerce’s NIST supports U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology to enhance economic competitiveness and address important societal challenges. The Administration’s FY10 budget summary does not include an overall agency total for NIST, but specifies a request of $70 million for the Technology Innovation Program (TIP) and $125 million for the Manufacturing Extension Partnership (MEP).

NIST’s core research and facilities programs are widely recognized as well-managed, high-leverage activities supported by world-class researchers. Accordingly, Committee Republicans continue to believe these activities should receive priority in the budget, and, along with MEP and TIP, be funded in accordance with the levels authorized in COMPETES. Additionally, we intend to continue close oversight of NIST’s budget and activities, and hope to work with the majority and the Administration to ensure appropriate and effective use of taxpayer dollars. Of particular interest will be NIST’s recently created external construction grant program, which received a dramatic increase in the stimulus bill even though the program has not been authorized or formally reviewed and considered by the Committee.

National Oceanic and Atmospheric Administration (NOAA)

Committee Republicans agree with the Majority regarding support for the FY10 funding request of $1.3 billion for satellite and instrument acquisitions at NOAA. However, we believe this request is a substantial increase compared to previous years, requiring much greater oversight by the Committee of NOAA’s plan to use them.

Department of Transportation (DOT)

The budget summary does not include information on research and development activities at DOT (most DOT R&D is funded through mandatory spending), but does note that the Administration intends to work with Congress to reform transportation programs as we near expiration of the 2005 Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA–LU). Committee Republicans welcome this commitment to reform, and look forward to working with the Majority, the Administration, and the Transportation and Infrastructure Committee to produce a responsible bill that strengthens Federally-funded transportation R&D programs.

Department of Homeland Security (DHS)

The Administration’s budget summary does not include information on science and technology activities at DHS, except to note that $355 million is requested for cybersecurity activities that include research and development. Committee Republicans are pleased to see cybersecurity highlighted as a key priority in the budget and look forward to reviewing further details on DHS programs in this area. We also look forward to reviewing budget details for major programs within our jurisdiction—the DHS Science and Technology Directorate, Domestic Nuclear Detection Office (DNDO), and firefighter grants programs—which together total over $2 billion. We also welcome the Majority’s commitment to pursue legislation to better align DHS research priorities to address the most critical threats and departmental needs.

Environmental Protection Agency (EPA)

Committee Republicans share the Majority’s view that investments in research and development will be beneficial in the form of greater cost-efficiency of environmental protection programs. However, we believe that any increase in funding levels should be done with thoughtful consideration. The $3.9 billion FY10 budget request for research, regulation and enforcement is almost an 18 percent increase over the FY09 request. Although we are aware that funding level requirements for research and development go through cycles, this budget request increase, by nearly one-fifth, may be out of proportion to what is needed; therefore, the minority would encourage increased oversight of EPA’s research and development agenda.
Congressman Grayson
Additional Views and Estimates

National Oceanic and Atmospheric Administration (NOAA)

The United States is extremely vulnerable to hurricanes, while our coastal areas are becoming more and more heavily populated. A National Academies Study found that half of the U.S. populations live within 50 miles of coastline. The devastation and impact of recent hurricanes have demonstrated the urgent need for an improved understanding of hurricanes and the ways in which we can better prepare to minimize loss of life and destruction of property. Billions of dollars are lost in hurricane-related events and will most likely escalate in the coming years. While billions of tax dollars are spent on rescue and relief efforts after a hurricane strikes, the federal government invests relatively little in the science and engineering research that could greatly minimize these costs and save lives.

More funding is needed to improve our ability to predict hurricanes and their intensity, and on mitigating the devastating affects on coastal populations and infrastructure. Research is needed to more quickly and accurately predict hurricane intensification, size, and location of landfall. Evacuations carry their own expenses and risks and we need to be certain they are necessary before state and local emergency managers issue these orders.

Modeling and understanding storm surges, rainfall, and flooding from hurricanes are of a great importance. In my opinion, improving hurricane storm observation technology can be done through GPS technology, unmanned aerial vehicles, mobile radars, high performance computing, satellites, etc. I encourage the Budget Committee to increase funding for the National Oceanic and Atmospheric Administration (NOAA) to ensure we have the best tools and can move weather forecasting technologies and models forward.

I am encouraged to see that some of these technologies received increases in the Recovery Act. The Science Committee continues to closely monitor the procurement, development and acquisition of the weather satellites to ensure new satellite systems such as the Geostationary Operational Environmental Satellite-R series (GOES-R) are on-track. Therefore, I also recommend the Budget Committee provide sufficient funds to National Aeronautics and Space Administration (NASA) for development of these new satellite tools and support a more effective transition of satellite technologies developed by NASA that have proven beneficial for improved weather forecasting to be integrated into NOAA’s operational suite of tools.

Alan Grayson
Member of Congress
Additional Views and Estimates (FY 2010)

We agree with the priorities expressed in these views and estimates, and concur with the statements of both the Majority and the Minority regarding our pressing need to increase investments in our nation's science initiatives. American innovation and ingenuity has placed us a global leader in research and development, and if we are to remain there, our commitment to our scientists, engineers, researchers and students must not waver.

We support the Minority views that we need to ensure that ongoing basic and applied research at the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST), and the Office of Science at the Department of Energy (DOE), does not suffer from any future decreases. Beyond funding these vital science agencies, we see value in contributing resources to efforts to overcome current hurdles in moving breakthrough technologies from the laboratories to the marketplace. For this reason, we support the Advanced Research Projects Agency for Energy (ARPA-E).

Bob Inglis
Member of Congress

Vernon J. Ehlers
Member of Congress
Committee on Science and Technology  
U.S. House of Representatives  
Additional Views

The Minority Views and Estimates for the Committee on Science and Technology incorporate many positions that I support regarding the future of the various agencies under the Committee's jurisdiction. However, I want to emphasize the need to be vigilant in our oversight of these agencies and their budgets. In these difficult times, it is incumbent upon the Committee to not let the taxpayer down. As the American people are being forced to tighten their belts and make difficult financial choices, this Committee must do the same. I worry that some of the budget increases in certain agencies, coupled with the massive outlays in the recently passed American Recovery and Reinvestment Act of 2009 are unsustainable, and in some areas are unwarranted, and goes beyond the levels authorized by this Committee. With each program, the Committee must ask the tough questions. Is this program necessary? Can we afford this program? Is this program already being done? How do we measure success or failure of the program?

Additionally, the Administration's budget seeks to make climate change a priority. As money is dispersed to this end, I believe we need to make sure that whatever conclusions that may be drawn are in fact based on sound science and that any policy initiatives should not be implemented without Congress and this Committee's active participation.

Paul Broun  
Member of Congress
ADDITIONAL VIEWS
COMMITTEE ON SCIENCE AND TECHNOLOGY
FISCAL YEAR 2010 BUDGET

Now is the time to act boldly to produce a more diverse, well-educated workforce in science, technology, engineering, and mathematics (STEM). Federal research agencies can have a major impact on our nation’s future competitiveness in these areas. Investments in research and education programs with demonstrated success represent wise stewardship of our nation’s resources. Specifically, we must invest in segments of our population that are not pursuing these areas in order to foster a climate of diversity, creativity and competitiveness. We must also support policies that target gaps in the STEM workforce pipeline – such as the early-career faculty period – where we are losing precious human capital.

Below is a summary of some of these programs, along with my recommendations regarding their support. Some recommendations were made while keeping in mind an annual inflation rate of 3.8%.

National Science Foundation

Rather than focusing on infrastructure support, I recommend that the Foundation be given robust increases for extramural research and education activities. NSF “Broadening Participation” programs are particularly effective in encouraging women and under-represented minorities to pursue STEM careers. The President suggests $76 for NSF for FY10, and the omnibus ($6.5b) and Recovery Act ($3b) will fund NSF at $10.5b. I recommend more robust funding for NSF, with a total of $10 billion for FY10.

Below are critical programs at that should receive sustained funding.

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<tr>
<th>NSF Program</th>
<th>FY09 Appropriation</th>
<th>FY10 Request</th>
<th>ERJ Request</th>
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<td>NSF Program Specified in America COMPETES</td>
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<tr>
<th>Other Important Broadening Participation Programs at NSF</th>
<th>FY09 Appropriation</th>
<th>FY10 Request</th>
<th>ERJ Request</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority Post-Doctor</td>
<td>NS</td>
<td>NS</td>
<td>$10m</td>
<td></td>
</tr>
<tr>
<td>ADVANCE Women's Program</td>
<td>NS</td>
<td>NS</td>
<td>$27m</td>
<td>25% increase from FY08 estimate</td>
</tr>
<tr>
<td>Informal Science Education (ISE)</td>
<td>NS</td>
<td>NS</td>
<td>$81m</td>
<td>25% increase from FY08 estimate</td>
</tr>
<tr>
<td>Broadening Participation in Computing (BPC)</td>
<td>NS</td>
<td>NS</td>
<td>$17.5m</td>
<td>25% increase from FY08 estimate</td>
</tr>
<tr>
<td>Graduate Research Fellowships - Women in Engineering and Computer Science</td>
<td>NS</td>
<td>NS</td>
<td>$10m</td>
<td>25% increase from FY07 actual</td>
</tr>
</tbody>
</table>

**Department of Energy**

Neither the FY09 Omnibus Appropriations Act nor the President’s initial FY10 budget request contained language specifying funds for education programs at the Department of Energy Office of Science. The America COMPETES Act of 2007 did authorize funds for several vital education and research programs. Recommendations for those are listed below.

In addition, set metering and smart grid technology investments, as well as ARPA-E, will empower individuals to use energy more wisely. We must boldly move energy efficiency to a personal level with stronger incentives. Some states are excelling at this effort, and greater federal engagement is needed.

<table>
<thead>
<tr>
<th>DOE Program</th>
<th>FY09 Appropriation</th>
<th>FY10 Request</th>
<th>ERJ Request</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOE Early Career Awards for Science, Engineering, and Mathematics Researchers</td>
<td>NS</td>
<td>NS</td>
<td>$25m</td>
<td>Recommended by America COMPETES</td>
</tr>
<tr>
<td>Summer Institutes</td>
<td>NS</td>
<td>NS</td>
<td>$25m</td>
<td>Recommended by America COMPETES</td>
</tr>
<tr>
<td>Pilot Program of Grants to Specialty Schools for Science and Mathematics</td>
<td>NS</td>
<td>NS</td>
<td>$30m</td>
<td>Recommended by America COMPETES</td>
</tr>
<tr>
<td>Experimental-based Learning Opportunities</td>
<td>NS</td>
<td>NS</td>
<td>$7.5m</td>
<td>Recommended by America COMPETES</td>
</tr>
<tr>
<td>National Laboratories Centers of Excellence in Science, Technology, Engineering, and Mathematics Education</td>
<td>NS</td>
<td>NS</td>
<td>$5m</td>
<td>No specific amount authorized in COMPETES</td>
</tr>
</tbody>
</table>
Office of Science and Technology Policy
Funding for OSTP has been neglected so severely over the past decade that the administration’s team of STEM advisors has dwindled by two thirds. OSTP must be restored to the strong, science-based, consultative body that is needed to coordinate cross-agency science programmatic activities and to liaison with the legislative branch.

<table>
<thead>
<tr>
<th>Program</th>
<th>FY09 Appropriation</th>
<th>FY10 Request</th>
<th>ERJ Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSTP</td>
<td>$5.3m</td>
<td>NS</td>
<td>$20m</td>
</tr>
</tbody>
</table>

National Aeronautics and Space Administration
Engineering is the number one field in which women and minorities are most under-represented. More robust funding of NASA education activities to broaden participation will be needed to utilize our workforce potential more fully.

The total FY09 omnibus appropriation for NASA specified $169.2 million for the Education account. I recommend that NASA Education be funded at $200 million; I support retaining the overall NASA appropriation at the President’s suggested $18.7 billion. One particular program, called MUREP, has a demonstrated success record for increasing diversity among NASA-related researchers.

<table>
<thead>
<tr>
<th>NASA Program</th>
<th>FY09 Appropriation</th>
<th>FY10 Request</th>
<th>ERJ Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA Education</td>
<td>$169m</td>
<td>NS</td>
<td>$200m</td>
</tr>
<tr>
<td>NASA Minority University Research and Education Programs (MUREP)</td>
<td>NS</td>
<td>NS</td>
<td>$50m</td>
</tr>
</tbody>
</table>

Department of Commerce – National Institute of Standards and Technology
These programs provide needed guidance to small businesses and also invest in small, start-up companies.

<table>
<thead>
<tr>
<th>Program</th>
<th>FY09 Appropriation</th>
<th>FY10 Request</th>
<th>ERJ Request</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing Extension Partnership (MEP)</td>
<td>$110m</td>
<td>$125m</td>
<td>$137.5m</td>
<td>25% increase from FY09 actual</td>
</tr>
<tr>
<td>Technology Innovation Program</td>
<td>$65m</td>
<td>$70m</td>
<td>$81.25m</td>
<td>25% increase from FY09 actual</td>
</tr>
</tbody>
</table>
Thank you for considering these requests. The programs mentioned above provide direct support to researchers, inventors, teachers, and students. They have demonstrated success in enhancing our STEM workforce so that it is more diverse, better educated, and more robust in the face of a "gathering storm" of international competitors.

Sincerely,

Eddie Bernice Johnson
Member of Congress

1 Source: http://www尸alification.ed.gov/common/common-inflation-rate
2 A list of these programs and their funding amounts is at: http://www.ed.gov/assistant/2010/05/2009/pdf/01-6-0009.pdf
3 NS means "not specified."
4 For references to the America COMPETES Act, funding totals were found at this source: http://www.epa.gov/energystar/topics/leadership/leadership_index.html?fa111-10.pdf
President Obama transmitted his budget request for Fiscal Year 2011 to Congress on February 1, 2010. The Committee on Science and Technology is pleased that the budget request includes significant investments in civilian research and development and is generally consistent with the funding priorities laid out in the America COMPETES Act. The Committee strongly shares the President’s interest in putting the country on a fiscally sustainable path and recognizes the need to make tough choices to restore fiscal discipline. At the same time, the Committee agrees with the Administration that investments in science and innovation play a crucial role in ensuring our nation’s long-term economic security and meeting the challenges of the future.

The following are the views of the Committee on Science and Technology on the budget for programs within the Committee’s jurisdiction.

**National Science Foundation**

The National Science Foundation (NSF) is the primary source of Federal funding for non-biomedical basic research conducted at colleges and universities. The budget request includes $7.424 billion for NSF in Fiscal Year 2011, an 8.0 percent increase over Fiscal Year 2010 enacted funding. This level of funding keeps the budget of NSF on a doubling path, consistent with the funding goals laid out in the America COMPETES Act. The Committee is pleased with the proposed increases to the Research and Related Activities budget at NSF, and supports efforts to increase funding for programs focused specifically on innovation.

The Committee notes that, since its creation in 1950, NSF has been tasked with strengthening science, technology, engineering, and mathematics (STEM) education at all levels. NSF’s education programs are unique in their peer review processes and their resulting capacity to develop new and improved educational materials and assessments, create better teacher training techniques, and move promising ideas to practice. The Committee supports funding NSF at a level that will ensure adequate and sustained support for its STEM education programs, particularly for the Noyce Teacher Scholarship Program and the Math and Science Partnerships Program, and is concerned that the budget request may not be sufficient to meet this goal.

The Committee will be moving legislation this year to reauthorize the National Science Foundation as part of the reauthorization of the America COMPETES Act.

**Department of Energy**

The Committee supports the budget request for the wide range of basic and applied research activities at the Department of Energy, including for the activities of the Office of Science, the Advanced Research Projects Agency–Energy, the Office of Energy Efficiency and Renewable Energy, and the Office of Nuclear Energy. The Office of Science funds basic research and world-class facilities that play an integral role in maintaining technological competitiveness. Recognizing the important link between the Office of Science and long-term economic prosperity in the United States, the America COMPETES Act authorized significant funding increases for the Office. As such, the Committee welcomes the Fiscal Year 2011 budget request of $5.1 billion for the Office of Science. This funding level represents a 4.4 percent increase over Fiscal Year 2010 enacted levels.

As envisioned by the National Academies’ 2005 report, Rising Above the Gathering Storm, and authorized by the America COMPETES Act, the Advanced Research Projects Agency–Energy (ARPA–E) is responsible for funding high-risk, high-payoff, game-changing research and development projects to meet the nation’s long-term energy challenges. The mission of ARPA–E is to overcome technological barriers in the development of energy technologies by sponsoring research and technology development that industry is unlikely to undertake alone. The Committee strongly supports robust funding levels for ARPA–E. The America COMPETES Act authorized funding of $300 million for ARPA–E in its first year of operation with a significant ramp up in funding over the next few years. The Fiscal Year 2009 appropriation bill and the American Recovery and Reinvestment Act provided ARPA–E with $415 million in funding for its first two years. The budget request for ARPA–E in Fiscal Year 2011 is $300 million. While the Committee appreciates the budget request, it urges a funding level more consistent with the funding trajectory envisioned in the America COMPETES Act.
The President's budget request includes $2.35 billion for the Office of Energy Efficiency and Renewable Energy (EERE), representing a 5.0% percent increase from the Fiscal Year 2010 enacted level. The Committee is pleased that the budget request includes significant increases in funding for select large-scale demonstrations, vehicle technology research, and the development of innovative new building technologies for increased energy efficiency, but is disappointed to see level and decreased budget requests for specific renewable programs.

The President is requesting $503 million for research and development at the Office of Nuclear Energy, an 8.0% percent increase over the Fiscal Year 2010 enacted level. Close to 80 percent of this request is dedicated to the Fuel Cycle R & D and Reactor Concepts RD & D programs. The Committee believes that the United States must have an inclusive portfolio to meet its growing need for energy and reduce greenhouse gas emissions, and recognizes nuclear power as a legitimate component of that portfolio. For this reason, the Committee supports research and development efforts to meet the technological challenges posed by expanded nuclear power production.

The Committee intends to move legislation this year to reauthorize the activities of the Office of Science and ARPA–E. The Committee also intends to draft and move legislation to authorize a comprehensive nuclear research and development program at the Department of Energy.

National Institute of Standards and Technology

The Committee is pleased that the Fiscal Year 2011 budget request provides funding increases for the National Institute of Standards and Technology (NIST) to advance technological innovation and economic competitiveness. The budget request for NIST for Fiscal Year 2011 is $918.9 million, a 7.3 percent increase over the Fiscal Year 2010 enacted level. This funding level is consistent with the doubling path set out in the America COMPETES Act.

The Committee strongly supports the $10 million increase proposed for the Technology Innovation Program (TIP). TIP awards cost-shared grants to small companies and joint ventures for the development of high-risk, high-reward technologies that meet critical national needs. The Committee recognizes TIP as an important tool in increasing technological innovation in this country, and supports efforts to provide the program with the funding it needs to complete its mission.

The Committee also strongly supports the $5 million increase proposed for the Manufacturing Extension Partnership. The MEP program is a public-private partnership in all 50 states and Puerto Rico that provides technical assistance for small manufacturers to modernize their operations and adapt to foreign competition. The increase in the Fiscal Year 2011 budget request would be used for innovation services for small and medium-sized manufacturers to accelerate technology adoption, promote environmentally sustainable practices, support market diversification, and improve workforce capabilities.

Finally, the Committee is supportive of the request for $69.4 million for Scientific and Technical Research and Services for focused investments in areas of national priority. In the face of increased global competitiveness, the Committee supports NIST’s efforts to work with industry to address green manufacturing and construction, cybersecurity, the metrology to support the growth and potential of biopharmaceuticals, advanced solar technologies, and disaster resilient buildings and infrastructure.

The Committee will move legislation this year to reauthorize the National Institute of Standards and Technology as part of the America COMPETES Act reauthorization.

National Aeronautics and Space Administration

The budget request for Fiscal Year 2011 includes $19 billion for the National Aeronautics and Space Administration (NASA), an increase of 1.5 percent over the enacted Fiscal Year 2010 level. The Committee is pleased that the budget request provides increased support for NASA's Earth Science Decadal Survey missions, aeronautics R & D on "green aviation", extending the operation and utilization of the International Space Station to at least 2020, and exploration-related technology development activities. At the same time, the decision to cancel funding for the Constellation Program and to increase investment in the development of commercial crew human spaceflight vehicles represents a significant shift in policy that requires careful and deliberate consideration by the Committee on Science and Technology. The congressional budget justification from NASA, providing detailed information about the proposed changes, was only made available to the Committee on February 22, 2010 and is currently under review.
The Committee intends to move a multi-year reauthorization of the National Aeronautics and Space Administration this year.

**National Oceanic and Atmospheric Administration**

The Committee is pleased that the budget request for Fiscal Year 2011 includes a 17 percent increase in funding for the National Oceanic and Atmospheric Administration (NOAA). The bulk of the proposed increase in funding at NOAA is for the National Environmental Satellite Data Information Systems Office and, more specifically, for the Joint Polar Satellite Systems (formerly the National Polar-orbiting Operational Environmental Satellite System). The Committee recognizes that the data provided by the Joint Polar Satellite Systems is critical for several key U.S. economic sectors, as well as national defense needs, and requires appropriate investment. At the same time, the Committee strongly supports adequate funding for the Office of Oceanic and Atmospheric Research and the National Weather Service, and is concerned that chronic underfunding may erode some of NOAA’s mission-critical services.

**Environmental Protection Agency**

The Committee has long advocated increased funding for research and development at the Environmental Protection Agency (EPA) to ensure that regulations are scientifically sound and cost effective. The Committee appreciates that the budget request includes a slight increase in funding for research and development at EPA, despite a proposed reduction in overall EPA funding. The budget request for Fiscal Year 2011 includes $847 million for Science and Technology programs and a $24.5 million transfer from the Superfund account to support Superfund-related research.

**Department of Transportation**

The Committee supports robust funding for research and development at the Department of Transportation, consistent with the commitment outlined in SAFETEA-LU. The Committee is pleased that the Research and Innovative Technology Administration at the Department of Transportation has received a funding increase in the Fiscal Year 2011 budget request (from $13 million to $17 million) and welcomes proposed increases for Research, Development, and Technology programs at the Federal Highway Administration (from $643.6 million to $652.8 million) and Research and Development at the Federal Transit Administration (from $14.8 million to $33.1 million). The Committee hopes to move legislation this year to reauthorize surface transportation research and development programs at the Department of Transportation.

The President’s budget request provides $190 million for research, engineering, and development at the Federal Aviation Administration, a decrease of $500 million below Fiscal Year 2010 enacted levels. The Committee supports the efforts of the FAA to conduct research, engineering, and development to improve the national airspace system’s capacity and safety, and urges a budget for these programs sufficient to carry out these responsibilities. In particular, the Committee supports the significant increase in funding, including a sizable increase in the research, engineering, and development budget, for the Next Generation Air Traffic Control System (Next Gen). The budget request includes $1.143 billion in funding (up from $868 million in Fiscal Year 2010 enacted) for all Next Gen programs at FAA, including $77.5 million in research, engineering, and development-related funding (up from $72 million in FY 2010).

**Department of Homeland Security**

The budget request includes $1.018 billion for the Department of Homeland Security’s Science and Technology Directorate, representing a 1.2% increase from the Fiscal Year 2010 enacted level. This increase is the result of the movement of the Department’s Domestic Nuclear Detection Office research program to the Science and Technology Directorate. Without the DNDO research programs, the budget request represents a 9.7% reduction in funding from Fiscal Year 2010 levels for the Science and Technology Directorate. The Committee strongly supports the work of the Science and Technology Directorate, and wants to ensure that it has the resources it needs to carry out the research and development required to keep our nation safe.

The Committee intends to move legislation this year to reauthorize the activities of the Department’s Science and Technology Directorate.
Sec. 425 OVERSIGHT OF GOVERNMENT PERFORMANCE

Section 425 of S. Con. Res. 13, the Fiscal Year 2010 Budget Resolution requires committees to review programs within their jurisdiction and make recommendations to reduce wasteful Federal spending to promote deficit reduction and long-term fiscal responsibility.

House Rule X assigns the Science and Technology Committee special oversight responsibility for “reviewing and studying, on a continuing basis, all laws, programs, and Government activities dealing with or involving non-military research and development.” The Committees appreciates this special oversight jurisdiction and makes the identification of waste, fraud, and abuse in all non-military research and development programs a top priority.

To support its important oversight work, in the 110th Congress, the Science and Technology Committee reestablished the Subcommittee on Investigations and Oversight to help identify instances of waste, fraud, and abuse that could create savings for the Federal taxpayer. The Subcommittee continues to oversee a wide-ranging and detailed oversight operation, conducting investigations into instances of wasteful spending and holding oversight hearings to ensure that taxpayer dollars are spent as effectively and efficiently as possible. The Committee's legislative subcommittees are also regularly involved in overseeing spending at their agencies, aggressively pursuing any allegations of waste, fraud, or abuse.

In 2009, the Committee collectively authored many oversight letters and held at least 16 oversight hearings. The Committee also worked closely with the Government Accountability Office (GAO) and the Inspectors General of its agencies on allegations of wasteful spending. Currently, the Committee has dozens of accepted requests for work pending with GAO and more are currently under development.

The Committee’s oversight into government waste and contractor abuse has resulted in real savings to taxpayers. Most recently, following extensive oversight by the Committee, the Department of Homeland Security announced on February 25, 2010 a decision to cancel the plan to deploy advanced radiation monitors at ports and border crossings around the country. This program had been the subject of 3 hearings and multiple letters from the Committee focusing on the excessive costs and inefficiencies of the proposed technology. Cancellation of the program will save taxpayers at least $1.5 billion in acquisition costs.

The Committee is committed to building on this record in Fiscal Year 2011. The Committee will continue work already underway in the areas of: computer system acquisitions, contractor costs and performance in the acquisition of next generation weather and climate satellites, procurement, conflict of interest and program management at the National Aeronautics and Space Administration, conflict of interest issues at the Department of Energy, and efforts to consolidate aviation weather services. In addition, the Committee will continue its aggressive oversight of funding appropriated in the American Recovery and Reinvestment Act, to ensure that funding is spent as intended.

List of Signatures
2. Rep. David Wu
5. Rep. Daniel Lipinski
7. Rep. Steven Rothman
10. Rep. Lincoln Davis
15. Rep. Alan Grayson
17. Rep. Marcia Fudge
22. Rep. Lynn Woolsey
Committee on Science and Technology

Additional Views

by Congresswoman Donna F. Edwards and Congressman Brian Baird

on the Views and Estimates of the Committee Fiscal Year 2011

We signed the Views and Estimates of the Committee on Science and Technology Fiscal Year 2011, however we would like to state our objection to the views by the Committee that investing in new nuclear reactors is a viable strategy to address America’s energy independence portfolio. The industry has a history of cost overruns and default and current escalating cost estimates, as well as ongoing issues of safety of nuclear technology and the long-term storage of nuclear waste. Therefore, we have considerable reservations about expending limited U.S. taxpayer dollars on nuclear energy.

Loan guarantees for new reactors are very risky. Moody’s Investor Services has called investment in new reactors a “bet the farm” strategy. According to the Congressional Budget Office (CBO), the likelihood of default on loans for new reactors is “very high—well above 50 percent.” Renewable energy and efficiency technologies would be far less risky, could be implemented far more quickly and would cost rate payers two to three times less.

Since any investment in nuclear power is going to be uncertain and costly, we urge the Committee to spend the time and energy that has been dedicated to nuclear energy by instead promoting cheaper and cleaner renewable energy and efficiency technologies. If we don’t make a strong investment in renewable energy and efficiency, we will miss our opportunity to have a strong energy portfolio for the 21st Century that is both safe and cost-effective.

Sincerely,

Donna F. Edwards
Member of Congress

Brian Baird
Member of Congress
CONGRESSMAN GRAYSON
ADDITIONAL VIEWS & ESTIMATES

National Oceanic and Atmospheric Administration (NOAA)

While I was encouraged to see an overall increase for the National Oceanic and Atmospheric Administration (NOAA) in the President's FY2011 Budget, I believe that additional funding remains necessary to improve our ability to predict hurricanes, hurricane intensity, and promote greater overall focus on mitigating the devastating effects that hurricanes have on coastal populations and infrastructure.

With nearly 50 percent of the total U.S. population living within 50 miles of coastline, it is essential that we identify how vulnerable these ever-expanding coastal populations become. I come from a community, and a state, that is no stranger to frequently changing, increasingly intense, and unpredictable weather patterns. Florida, with a population of more than 15 million, and a coastline stretching 1,200 miles, has been the most vulnerable state in the country in regards to hurricane or tropical storm activity, nearly doubling any other state in the total number of hurricanes and major storms on record since 1851.

The devastation and impact of recent hurricanes have demonstrated the critical need for an improved understanding of hurricanes and the ways in which we can better prepare to minimize loss of life and destruction of property. The economic impacts alone caused by hurricanes can cripple entire regions of the United States, as we saw in New Orleans in 2005, where Hurricane Katrina displaced hundreds of thousands from their homes, decimated local industry, and totaled an overall economic impact of nearly $150 billion dollars in Louisiana and Mississippi.

While billions of U.S. taxpayer dollars are spent on evacuation and relief efforts, the federal government invests little in the science and engineering research that could greatly minimize these enormous costs and save lives. Greater understanding of hurricanes and more accurate hurricane forecasts regarding
landfall and intensity are essential in moving forward. I strongly believe that an increased focus on hurricane modeling, the understanding of storm surges, rainfall, and flooding will increase our success in accurate track predictions and mitigation strategies. With greater attention to these areas, NOAA will need access to cutting edge storm observation technologies, as well as state-of-the-art research and observation facilities. I encourage the Budget Committee to increase funding for NOAA, to ensure that we have the best tools available to move hurricane forecasting technologies and models forward, thereby improving safety and economic integrity of our exposed coastal populations.

[Signature]
It is important that we continue to make appropriate investments in science and technology research, development, and math and science education in order for the United States to remain a world leader in competitiveness and innovation. While Committee Republicans agree, with the Majority that the Administration's budget summary “recognizes the benefits that science and technology and research and development investments have for our country’s economic competitiveness, energy security, job growth and environmental health,” we are also mindful that in the current economic environment, the nation faces numerous and difficult budgetary decisions that will require our careful consideration, diligent oversight, and appropriate action.

We are pleased that the budget summary continues to build on the American Competitiveness Initiative and the America COMPETES Act (COMPETES) (P.L. 110–69) by providing funding for physical sciences and engineering at the National Science Foundation (NSF), the National Institute of Standards and Technology (KIST), and the Office of Science at the Department of Energy (DOE), but have some concerns that in the quest to get stimulus money out the door, the Administration may be accelerating this funding beyond authorized levels with little to no direction on spending. We are skeptical about the claims of the Administration regarding the number of jobs created by the funding that was provided by the American Recovery and Reinvestment Act and remain concerned about the lack of oversight of the funding for these programs.

National Science Foundation (NSF)

The FY11 budget request for NSF is $7.4 billion. This $551.9 million increase is an 8 percent increase over the FY10 estimate. While Committee Republicans recognize that the budget request falls below the amounts authorized in the America COMPETES Act (COMPETES), we also note that in addition to the $596 million in stimulus funds obligated for FY10, an additional $450 million remains unobligated. We support a robust budget request for NSF, but remain concerned that we not exceed current authorization amounts.

With regard to education, we agree with the Majority that NSF has an important and unique role to play in strengthening science, technology, engineering, and mathematics (STEM) education at all levels. We further agree with the Majority that the FY11 budget should provide sustained support for K–12 programs, including the Noyce Teacher scholarship program and the Math and Science Partnership Program.

The FY11 budget request continues to make climate change research and education a priority throughout the Foundation. NSF currently funds numerous research and education programs that address climate change across all directorates; however, the FY11 budget request continues to direct funding specifically to climate change. By continuing to single out a specific area of research over myriad others for targeted funding, this budget request hinders NSF’s ability to support all science and engineering disciplines, potentially depriving funding for other much needed basic research.

Department of Energy (DOE)

In general Committee Republicans agree with and support the Administration’s focus on basic research in this budget, particularly the efforts to place the Office of Science on a doubling path as called for by the America COMPETES Act. However, we note that the $300 million request for the Advanced Research Projects Agency (ARPA–E), if directed to the Office of Science, would be sufficient to provide for full funding along the doubling path endorsed by the America COMPETES Act and the Obama Administration. A majority of Republicans opposed the creation of ARPA–E in part due to concerns that it would divert funding from the Office of Science and impede the doubling effort. This budget appears to validate these concerns.

Further, those of us in opposition to ARPA–E continue to have concerns regarding the suitability of the DARPA model applied to the energy sector as well as the continued lack of clarity regarding the scope and mission of the agency. Accordingly, we believe that high-risk, high-reward R&D projects be funded through the traditional DOE structure and prioritized against existing applied energy technology programs. More broadly, we also remain concerned by the overall lack of clarity in the budget with respect to the numerous programs with overlapping goals and similar
activities. In particular, the budget does not effectively articulate the details of and distinctions between energy technology development programs, such as the ARPA-E, Energy Innovation Hubs, Energy Frontier Research Centers, and traditional applied technology programs. Accordingly there appears to be a high potential for overlap and duplication of effort that must be addressed before funding increases for these programs move forward.

Committee Republicans are also disappointed and concerned with the impact of the proposed budget on American energy independence. While the budget's emphasis on renewable energy and energy efficiency programs will certainly contribute to energy independence—primarily, expanding traditional sources of domestic energy—is disturbing. For example, we are deeply disappointed that the President's budget summary proposes to eliminate the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Program established in Section 999 of the Energy Policy Act of 2005 (P.L. 109–58). Section 999H(a) sets the funding for this program at a level of $50-million-per-year provided from Federal lease royalties, rents, and bonuses paid by oil and gas companies—not taxpayers. It should be clear that the overall program was initiated and carried out to reach energy known to exist in the areas targeted—energy that was impossible to produce without new technology—and that the required technology would be eventually be paid for from the energy captured. The funds are to be directed towards research specifically targeting four areas: ultra-deepwater resources, unconventional natural gas and other petroleum resources, technology challenges of small producers, and research complementary to these areas.

Additionally, while we are wholly supportive of research into renewable and alternative forms of energy, we feel that domestically produced oil and natural gas will continue to play an important role in powering our country and must therefore receive support to increase our domestic supply and reduce our foreign dependence. The budget eliminates funding for research and development in fossil energy and appears to focus funding solely on carbon capture and sequestration research and development associated with coal fired electricity generation and industrial sources. We are pleased that research into carbon capture and storage is playing a prominent role in the budget summary, but we encourage the Budget Committee to continue to recognize the importance of oil and natural gas research and development to our country's future. The domestic oil and natural gas industry experienced nine (9%) percent job growth from 2002–2008. With the Administration’s recent focus on jobs proposals in the budget that stymie job growth should be fully examined.

While we commend the administration’s efforts to provide additional loan guarantees for nuclear power plants and support efforts to focus research and development into reprocessing of spent nuclear fuel and the next generation of nuclear plants, we note the President’s determination that Yucca Mountain is not a workable option and the subsequent decision to withdraw, with prejudice, the license application for the Yucca Mountain repository program raises significant regulatory and legal issues that may not only adversely affect the licensing and construction of a new fleet of nuclear power plants, but also may impact existing operating nuclear plants and license renewals. We believe that it is premature to withdraw this application, which has already cost the American taxpayers upwards of $10 billion, prior to consideration of all the options for disposal of nuclear waste by the Blue Ribbon Commission. Nuclear energy should be fully supported as the type of clean energy technology that will reduce dependence on foreign oil and all options should be allowed to be considered with regard to addressing spent fuel.

National Institute of Standards and Technology (NIST)

The Department of Commerce’s NIST supports U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology to enhance economic competitiveness and address important societal challenges. The Administration’s FY11 budget request for NIST is $918.9 million, a 7.3 percent increase over the FY10 level. This amount does not reflect the recently announced $123 million in FY10 stimulus funds for the NIST Construction Grant program (NCGP) to build new university research facilities or the $180 million in stimulus funds to maintain and renovate current NIST facilities.

NIST’s core research and facilities programs are widely recognized as well-managed, high-leverage activities supported by world-class researchers. Accordingly, Committee Republicans agree with the Majority that these activities should receive priority in the budget; and, along with the Manufacturing Extension Partnership (MEP) and the Technology Innovation Program (TIP), be funded in accordance with the levels authorized in COMPETES.
At the same time, Committee Republicans intend to continue close oversight of NIST’s budget and activities and hope to work with the Majority and the Administration to ensure appropriate and effective use of taxpayer dollars. Of particular concern is oversight for the new NCGP program, which received Stimulus funds but was not authorized by Congress or formally reviewed and considered by this Committee. Also, Committee Republicans are concerned that even though the Construction of Research Facilities (CRF) request is $22.2 million below the FY10 levels (not including Stimulus funding), it is still $124.8 million. Given that NIST received $180 million in Stimulus funds to address maintenance and renovation at its facilities, we would like a more thorough accounting of how these funds are being used in FY10 and the need for additional funding in FY11.

National Aeronautics and Space Administration (NASA)

NASA is at a critical juncture. The agency is preparing to retire the Space Shuttle at the end of this year without a successor vehicle in place. Our nation faces the prospect of sending hundreds of millions of dollars to Russia over several years to buy seats on their launcher until a replacement vehicle is in place. Given this national challenge, the President’s FY2011 budget request of $19.0 billion for NASA, which represents an increase of $276 million (1.5%) over FY2010 enacted, is justified. While we are supportive of this increase, we differ significantly on the direction of the agency.

The FY2011 budget request reflects a radical departure for the agency. It cancels NASA’s successor to the Space Shuttle, the Constellation program, which would be capable of launching astronauts to the International Space Station as well as to destinations beyond low Earth orbit. Two successive Congresses (109th and 110th) under different party leadership have overwhelmingly supported Constellation in NASA authorization bills. Over the last five years taxpayers have invested $9.1 billion on Constellation, and NASA engineers are confident that most of its technical challenges have been addressed. To cancel this program now without reaping the benefits of this investment would be a huge waste of taxpayer dollars. It also jeopardizes our nation’s ability to return humans to space as quickly and safely as possible, and could have detrimental effects on our national security and global pre-eminence.

In place of Constellation, the FY2011 budget increases spending for technology research and development activities that someday may provide new propulsion, sensor, and materials capabilities for yet-to-be-determined missions. It also shifts money toward a commercial crew program ($500 million in FY2011; $5.8 billion over five years) to seed the development of commercial entities proposing to launch humans into low Earth orbit. Without offering any proof or programmatic details, the budget proposal assumes that commercial launch providers will be able to offer human spaceflight services that are safer, faster, and cheaper. Committee Republicans have long supported the development of commercial cargo services and have ensured that authorization bills include funding for commercial cargo ventures. But, we also believe that until these entities can demonstrate an ability to safely put cargo into space it is not prudent to gamble American lives.

Committee Republicans are also concerned that the FY2011 budget significantly increases NASA’s spending for Earth Sciences, adding $381 million (27%) over the FY2010 enacted, and $1.8 billion over four years (FY2011–FY2014) compared to FY2010. The other science divisions receive modest increases or are flat-funded. Earth Science will eventually consume 40% of the agency’s overall science program, crowding out funding for exciting science missions flown by the astrophysics, planetary sciences, and heliophysics communities.

The Committee believes it is imperative for NASA to maintain world leadership in human spaceflight capabilities. We are at the tipping point with the retirement of the Space Shuttle, and many industry experts firmly believe the Constellation program is the safest and most prudent investment. Given that the Science and Technology Committee has deliberated on this issue for several years and advanced bipartisan, broadly-supported legislation, it is disconcerting that this budget proposal suggests such a radical and unsupported direction for the agency.

Department of Commerce—National Oceanic and Atmospheric Administration (NOAA)

Committee Republicans have reservations about the FY11 budget request for NOAA of $5.6 billion, an $806 million (17 percent) increase over the FY10 enacted level. This substantial increase reflects several momentous policy decisions that have not been vetted by the Committee on Science and Technology.
The minority notes a significant change in this budget request from previous budget requests with the dissolution of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) tri-agency program with NASA and DOD, and the creation of the Joint Polar Satellite System (JPSS), in which NOAA will be solely responsible for the cost of development and procurement of instruments for polar-orbiting weather satellites. The DOD is currently reviewing its options in moving forward with its own separate weather satellite system. Severing the tri-agency venture is a drastic attempt to ensure the prevention of potential data gaps in weather and climate information in the next few years. Over the last several Congresses, the Committee has held numerous hearings regarding the problems and delays in NOAA’s next generation of satellites. However, we have not yet had a chance to evaluate the implications of this decision since it was announced just prior to the release of the President’s budget.

Although this separation is still in transition with no clear path forward and no plan how to get there, NOAA has submitted a budget request that would cover the increased expense of building this satellite system independently. Accordingly, the minority believes that the FY11 request for $2.2 billion for the National Environmental Satellite Data and Information Service (NESDIS) is premature at this time. This request is $810.5 million (58 percent) above the FY10 enacted levels as a result of the JPSS program. We believe that this radical shift in policy requires much more oversight and scrutiny by Congress and we strongly urge a more comprehensive policy be developed before moving forward with this plan.

Committee Republicans are extremely hesitant about the request of $464.9 million for the Office of Ocean and Atmospheric Research (OAR), which is a $15.7 million (3.5 percent) increase over FY10 enacted levels. Coupled with the $170 million OAR received in stimulus funding, this increase represents a continued commitment to enhance climate change research. While another increase at this time also begs the question of fiscal responsibility, our chief concern is that NOAA has recently announced its intent to establish a NOAA Climate Service as a new line office. This announcement came after the release of the President’s budget, so it was not included in the FY11 request. It is our understanding that NOAA intends to request a reprogramming from the Appropriations Committees which will simultaneously move several key programs into the new line office, including the physical science parts of climate research and modeling from OAR, 3 data centers from NESDIS, and the climate observing network from the National Weather Service (NWS). As a result, OAR will be left with approximately $200 million and will become nothing more than a collection of random research programs.

The minority does not support NOAA’s plan for creating a Climate Service for both policy and process reasons. We are extremely concerned that moving research into an operational program office will leave the research needs vulnerable since operational priorities will take precedence. NOAA has had experience with research suffering in an operational office in the past and the result was the NWS research components were moved to OAR in order to keep the focus of NWS on operations. With this proposal, NOAA is choosing to ignore the lessons of the past.

Furthermore, by moving the essential climate research programs into a new line office, NOAA abandons the interdisciplinary benefits gained by housing physical climate research with research from other scientific branches. The proposed Climate Service will attempt to provide adaptation products, which require the successful integration of biological, physical, environmental and social sciences into products and tools. However, the focus on solely the physical science research as part of the Climate Service indicates a shortsighted approach to meeting future climate product demands. One only needs to look at the National Integrated Drought Information System program (MIDIS) and its success to see the need to integrate many different types of science pulled from many different sources to provide a complete picture of impacts and tools for planning. Finally, OAR would effectively be crippled by the removal of half its research program and funding, thus weakening overall science at NOAA.

Therefore, we do not support the increase request for climate research in OAR until we can be satisfied that any new Climate Service would not irreparably harm research, as this current plan most certainly does, and until NOAA reorganization proceeds through proper legislative channels, including consideration by the Committee on Science and Technology, which is the appropriate course of action for a reorganization of this magnitude.

Environmental Protection Agency (EPA)

Committee Republicans share the Majority’s view that investments in research and development will be beneficial in the form of greater cost-efficiency of environmental protection programs. However, we are concerned that EPA’s request includes
funding for the promulgation of regulations that Congress does not yet support. The $847 million FY11 budget request for science and technology is a 0.1 percent increase over the 2010 enacted levels. Despite the heavy focus of the EPA budget on the anticipated implementation of a host of new regulations triggered by the EPA's endangerment finding finalized in December 2009, we are extremely concerned that only $16.9 million of the Climate Protection Program budget request is for science and technology, a $2.9 million decrease from FY10 enacted levels. As this is the program under which the Agency intends to promulgate these new regulations, such a request is indicative of EPA’s “putting the cart before the horse” mentality in planning to create and implement new regulations that reduce greenhouse gas emissions with very little consideration of the need to develop the technology that would be required to do so.

U.S. Department of Transportation

Federal Aviation Administration—Research, Development and Technology

The FY2011 budget request provides $400.57 million for FAA research and development activities, a $11.53 million (3%) reduction below FY2010 enacted. Agency R&D is spread across four accounts:

1. Office of Commercial Space Transportation (OCST). The FY2011 budget request provides $15.75 million for OCST, a $510 thousand (3%) increase over FY2010 enacted. OCST is responsible for licensing and regulating commercial space launches and reentries to ensure compliance with standards designed to protect public safety. In addition, OCST encourages the commercial space launch industry to maintain pace with latest technological improvements in launch hardware and practices, and it serves to promote the growth of the US industry.

2. The Research Engineering and Development account (Aviation Trust Fund), with an FY2011 request of $190.00 million, compared to $190.50 million enacted in FY2010. R&D conducts research to support a safe, efficient and environmentally acceptable aviation system in five key areas: air traffic services, airport technology, aircraft safety, human factors, and the environment.

3. A portion of the Facilities & Equipment account (Aviation Trust Fund) dedicated to engineering, development, test and evaluation, with an FY2011 request of $155.16 million, a 10% reduction compared to FY2010 enacted.

4. A portion of the Airports Improvement Program account (Aviation Trust Fund) with an FY2011 request of $42.22 million, a 13% increase compared to FY2010 enacted.

At a programmatic level we support the FAA’s budget request for development and implementation of NextGen, our nation’s future air traffic management (ATM) System. NextGen technologies will ensure that our national airspace system can readily accommodate future growth while maintaining the highest levels of safety. Whether speaking about NextGen R&D, or NextGen generally, it is essential these efforts be supported.

Research and Innovative Technology Administration (RITA)

The FY2011 budget request provides $17.2 million for RITA, a $4.2 million (32%) increase over FY2010 enacted. RITA is responsible for coordinating DOT’s research and development programs, as well as coordinating and developing Positioning, Navigation and Timing (PNT) technology, PNT policy coordination, and spectrum management. RITA is the program manager for the Nationwide Differential Global Positioning System. Most of the requested increase will support maintenance and equipment capitalization for the PNT services, especially through its Nationwide Differential Global Positioning System.

We also support the proposed funding levels for research and development for the Federal Highway Administration ($652.8 million in FY2011, a 1% increase over FY2010 enacted) and the Federal Transit Administration ($33.1 million in FY2011, a 124% increase over FY2010). Both of these essential activities will help America develop transportation solutions needed to sustain economic growth.

Department of Homeland Security (DHS)

The FY11 budget request for the Department of Homeland Security’s Science and Technology Directorate is $1.02 billion, a 1.2 percent increase from the FY10 level.
This increase reflects the movement of the Domestic Nuclear Detection Office’s transformative research program to S&T. Without the program transfer, S&T funding would be 9.7 percent below FY10 funding levels. Committee Republicans are in strong agreement with the Majority that the work of the Science and Technology Directorate is important, and we will work to ensure that it has the resources it needs to carry out the research and development required to keep our nation safe.

Recognizing the importance of both Assistance to Firefighter Grants (AFG) and Staffing for Adequate Fire and Emergency Response (SAFER) grants to our Nation’s fire departments, Committee Republicans remain concerned that with the consolidation of the Firefighter Assistance Grants Program into the State and Local budget line, the AFG program will continue its declining trend of funding. We strongly encourage the Administration to make sure that both grant programs, AFG and SAFER, remain balanced.
Members who signed:
Ralph Hall
James Sensenbrenner
Lamar Smith
Judy Biggert
Todd Akin
Randy Neugebauer
Bob Inglis
Michael McCaul
Mario Diaz-Balart
Brain Bilbray
Adrian Smith
Paul Broun
Pete Olson
Appropriate investments in research and development are critical to the future of every American, of our economy, and of our position of strength in the world. But we should not, we can not, we must not, mortgage that future by borrowing ever increasing amounts to achieve those goals. Although I agree with much of the Minority Views and Estimates, there are some specific areas on which I wish to state a different view.

U.S. Global Change Research Program The U.S. Global Change Research Program (USGCRP) is the government-wide program created by Congress in 1990 "to improve understanding of uncertainties in climate science, expand global observing systems, develop science-based resources to support policymaking and resource management, and communicate findings broadly among scientific and stakeholder communities." The $2.6 billion requested in the FY 2011 budget is a 20.7% increase over the FY 2010 enacted funding. These funds are requested directly in the budgets of NASA, NSF, NOAA, NIST, DOE, and other departments.

To be blunt, the entire budget for this program should be zeroed out. Federal global warming research has reduced, rather than improved, understanding of the uncertainties in climate science. Many of the resources we have are not science-based. To continue down this path is foolish and foolhardy. By choosing not to borrow this $2.6 billion, the proposed increase to the total federal R&D budget over the FY 2010 enacted budget could be reduced by more than 70%.

National Aeronautics and Space Administration I am pleased the budget request for Fiscal Year 2011 for the National Aeronautics and Space Administration (NASA) calls for increased research and technology development so that America can be more competitive and NASA can explore the solar system more affordably. This is critical, both to create long-term jobs and to enable NASA to continue to explore even as we work to control deficit spending.

I am further pleased by the increase of $16 million to near-Earth object identification and tracking. I am hopeful that this is a sign the Administration takes this issue seriously, and will meet its obligation under the NASA Authorization Act of 2008 (P.L. 110-422) in "recommending a Federal agency or agencies to be responsible for protecting the United States from a near-Earth object that is expected to collide with Earth, and implementing a deflection campaign, in consultation with international bodies, should one be necessary with the responsibility for mitigation responsibilities."

And finally, I applaud the courage of the Obama Administration in calling for the cancellation of the Constellation program. Constellation, according to our nation’s best
experts, is unsustainable and would not have fulfilled the goal of putting America back on the Moon by 2020 or even 2025, and we must be better trustees of America's public funds than continuing to spend funds on a program that cannot succeed. Instead, by choosing to invest in commercial launch options to low Earth orbit, our nation will invest in multiple projects to enable and stimulate both commercial human access to Earth orbit and more affordable NASA exploration beyond Earth orbit. I am strongly in support of these goals; I always have been. I therefore strongly support and endorse the key human spaceflight and technology elements of the President's budget for NASA.
Committee on Science and Technology  
Fiscal Year 2011 (FY11)  
Additional Views and Estimates

Department of Energy – Advanced Research Projects Agency

ARPA-E supports high-risk, high-payoff research and development designed to move breakthrough energy technologies into the market. It harnesses the considerable capabilities of American scientists, investors, innovators, and engineers to deliver robust, secure, and clean sources of energy.

ARPA-E holds much promise in developing and deploying technologies that will reduce our dependence on foreign oil and improve energy security. But I question whether the proposed higher funding levels will detract from important basic research performed by the Office of Science at the Department of Energy.

Department of Homeland Security

This Committee has continued to offer support for both Assistance to Firefighter Grants and Staffing for Adequate Fire and Emergency Response grants to our Nation’s fire departments. Given the country’s massive debt, we must ask ourselves “who does what” in order to restrain federal spending. Traditionally, states and local communities have been responsible for fire prevention and response efforts. We should limit this assistance to events that rise to the level of national disaster.

Bob Inglis  
Member of Congress
The Minority Views and Estimates for the Committee on Science and Technology incorporate many positions that I support regarding the future of the various agencies under the Committee’s jurisdiction. However, I want to emphasize the need to be vigilant in our oversight of these agencies and their budgets. In these difficult economic times and the record breaking deficits and debt levels, it is vital that the Committee not let the taxpayer down. As the American people are being forced to tighten their belts and make tough financial decisions for their families, this Committee must do the same. I am very concerned that some of the spending in certain agencies, coupled with the massive outlays in last year’s American Recovery and Reinvestment Act of 2009 are unsustainable, in many areas unwarranted. With each program, the Committee must ask the tough questions. Is this program necessary? Can we afford this program? Are these programs constitutional? Is this program already being done? How do we measure success or failure of the program?

Additionally, the Administration’s budget continues to make climate change a priority. As money is dispersed to this end, I believe we need to make sure that whatever conclusions that may be drawn are in fact based on sound science and that any policy initiatives should not be implemented without Congressional approval and oversight and with this Committee’s active participation.

Paul Broun, M.D.
Member of Congress
I am deeply concerned about a proposed cut to NASA's human spaceflight program. Although NASA's top line amount has been increased, the proposed cancelling of the Constellation program is unwise, unwarranted, and unnecessary. Without Constellation, we have no concrete plans to develop a manned spaceflight system and our country will instead have to rely on purchasing seats from the Russians for the foreseeable future.

Furthermore, Constellation was designed to take humans beyond low Earth orbit to enable our eventual return to the Moon and to other interesting destinations. Without it, we are putting ourselves at risk of ceding US preeminence in space, especially in light of efforts now underway by other space-faring nations to develop their own manned spaceflight systems.

Contrary to recommendations made by the Augustine Commission to provide additional resources to ensure the agency can develop and sustain a "sound exploration program" – the administration has chosen to not take this path. Surprisingly, the budget proposal took current spaceflight program funding and shifted it toward technology research efforts, but without providing a destination, strategy or goal for their intended use. The lack of resources in itself is troubling and puts NASA in a very difficult position, but the proposed cancellation is devastating, making it very difficult to sustain funding over a long period of time if we do not have a clear goal.

The negative impact on our economy, to our industrial base, and on the ability to inspire students and young people to pursue studies in science and engineering, should make it very clear to anyone that this is the wrong decision to make.

Just as importantly, if our goal is to inspire students to learn about and pursue careers in STEM, we should maintain a commitment to the most visible and exciting program that has motivated more students and young professionals than any other: our nation's human spaceflight program.

This budget sets the priorities for our nation, and there is no doubt that American leadership in the area of human spaceflight should continue to be one of those national priorities.

Rep. Pete Olson
January 28, 2009

Edolphus Towns  
Chair  
Committee on Oversight and Government Reform  
217 Rayburn House Office Building  

Robert A. Brady  
Chair  
Committee on House Administration  
1309 Longworth House Office Building  

Dear Chairs,

Enclosed with this letter is the oversight plan of the Committee on Science and Technology, adopted January 28, 2009, pursuant to House Rule X (2)(d).

If there are any questions or concerns regarding this plan, please direct them to the Committee's Chief Counsel, John Piazza (56375). Thank you for your attention to this matter.

Sincerely,

Bart Gordon  
Chair  

Cc: Ralph Hall, Ranking Minority Member  
Enclosure
OVERSIGHT PLAN
FOR THE COMMITTEE ON SCIENCE AND
TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

111TH CONGRESS

As Adopted by the Committee
January 28, 2009
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I. Introduction

In his inaugural address President Obama said, "The question is not whether our government is too big or too small, but whether it works." That is the challenge that informs the oversight plan of the Committee on Science and Technology. We are optimistic that the Obama Administration not only understands the special role Congress can play in conducting oversight, but is anxious to work with the Committee to identify problems and fix them.

During the past two years, the Committee has run a very aggressive, wide-ranging oversight operation. House Rule X sets the Committee's jurisdiction, but the legislative jurisdiction assigned to the Committee is narrower than the oversight jurisdiction (relevant text from Rule X can be found at Appendix A). Rule X also assigns the Committee special oversight responsibility for "reviewing and studying, on a continuing basis, all laws, programs, and Government activities dealing with or involving non-military research and development." The Committee appreciates the special function entrusted to it and will continue to tackle troubled programs and search for waste, fraud and abuse in non-military research and development programs regardless of where it may be found.

Much of the oversight work of the Committee is carried out by and through the Investigations and Oversight Subcommittee. However, oversight is necessarily built into the work of every Subcommittee and the Full Committee. All elements of the Committees take their oversight charge seriously, and those elements have worked cooperatively in the past, as they will in the future, to meet our oversight responsibilities.

In the last Congress, the Committee collectively authored almost 250 oversight letters (listed in Appendix B). Counting the Full Committee and the Subcommittees, the Committee held 80 oversight hearings. The Committee is committed to building on this record in the 111th.

The Committee also routinely works with GAO and the Inspectors General of our agencies to maintain detailed awareness of the work of those offices. At the moment, the Committee has 30 accepted requests for work pending with the Government Accountability Office and more will be developed over the coming weeks and months. Many of these requests are bipartisan, having been signed by both Chairmen and Ranking Members of our Committee and Subcommittees, or include multiple Committee Chairmen where there are shared interests.
The Committee on Science and Technology has a long history of maintaining a standing Subcommittee for Investigations and Oversight. The Subcommittee was first established in the 95th Congress. Among its Chairs have been Al Gore, Jr., Harold Volkmer and Howard Wolpe. The Subcommittee was eliminated in the 104th Congress. Chairman Gordon and the new Democratic majority re-established the Subcommittee in the 110th Congress. Mr. Miller of North Carolina chaired the panel in the 110th Congress and will return as Chair in the 111th.

Some of the areas that marked the oversight work of the Committee in the last Congress will continue to feature prominently in the work of the Committee going into the 111th. The Committee fully expects to continue its work on science integrity and the suppression of science, especially in the area of climate change and environmental health. The Committee expects to keep inquiring about the role of science in shaping environmental and safety regulations, as well as the use of science by public health agencies. We expect to continue to monitor the badly mismanaged satellite acquisitions of the National Oceanic and Atmospheric Administration (NOAA).

Government waste and contractor abuses were an important focus of the work of the Committee during the 110th, and this area will gain renewed attention in the next Congress. In the 110th, work by the Committee led to Appropriations reductions of $17.8 million with another $1.5 million in Federal property identified for reclaiming from a contractor. The Committee also identified a program which had misspent hundreds of millions of dollars during a computer acquisition; that program has been significantly restructured. Finally, the Committee has been working with GAO and other Committees to instill some rigor and transparency into the proposed acquisition of new radiation portal detection monitors; that work has kept between $2 and $3 billion from being committed to acquiring immature and unproven technologies.

The Committee has also kept pressure on NOAA to rein in contractor costs and improve performance in the acquisition of next generation weather and climate satellites, which have experienced a multi-billion dollar cost overrun. It is hard to calculate the savings that come from the Committee’s work in this area, but it is quite likely that without this oversight, the cost overruns would be even more outrageous.

In the next Congress, the Committee will expand its work on identifying contractor abuses and cost savings by undertaking a wide-ranging review of contracts let by our agencies in the past few years. The Committee will be looking for specific instances of abuse and lessons
on how to better manage contract competitions and awards so that taxpayers know their money is being well spent. More specific themes and examples of planned oversight can be found in the text that follows.

II. Oversight Themes

In the 111th Congress, the Committee will work along three broad lines of inquiry with respect to oversight: (1) restoring public confidence in the integrity of public science; (2) helping to ensure that programs are well managed and that money is properly spent; and, (3) evaluating programs and identifying emerging challenges. The broad areas are described below, along with illustrations of work the Committee intends to undertake.

Of course, much of oversight is driven by events. Twice in the Committee’s history it has had to radically shift its resources to respond to the catastrophic loss of a Space Shuttle. In the last Congress, the Committee did not plan to review the EPA’s Integrated Risk Information System or dig into the way the Agency for Toxic Substances and Disease Registry handled the evaluation of public health risks associated with FEMA trailers. However, both emerged as very important oversight initiatives that garnered significant public attention. Each of those initiatives also contributed, in different ways, to setting the science integrity agenda for the new Obama Administration. Nevertheless, we feel that the work below is an accurate portrayal of the Committee’s oversight intentions as of January 2009.

A. Restoring Public Confidence in the Integrity of Public Science

In the 110th Congress, the Committee on Science and Technology carried out an enormous amount of work on the abuse, misuse or suppression of science. The fruits of that work have already been shared with the new Administration, but there will remain a need to identify areas of Federal science policy where integrity must still be restored. The work we intend to undertake includes the following areas:

Failures of Public Health Work at the Agency for Toxic Substances and Disease Registry: This is ongoing work which began by examining the failure of ATSDR to accurately assess the potential adverse health effects of FEMA trailers on Hurricane Rita and Katrina survivors. The Committee anticipates working broadly on how ATSDR can be strengthened to better protect public health.
Strengthening Science at EPA: The Committee has done substantial work on the Integrated Risk Information System (IRIS) at EPA, a risk assessment database used to guide the public and Government about health risks associated with toxic chemicals. EPA has been hamstrung in this work by OMB and other agencies. This is just one area where EPA’s science work is now micromanaged by those outside the agency. The Committee will continue to develop this issue with an eye to helping the next Administration get EPA on a better path. [Note that GAO has added the EPA IRIS program to its High Risk Watch List largely based on the work of the Subcommittee on Investigations and Oversight.]

The Office of Information and Regulatory Affairs’ (OIRA) Interference with Science-Based Agency Work: OIRA at OMB has been second-guessing science in proposed IRIS listings, proposed regulations and proposed guidance. The Committee will continue to work with the new Administration to strengthen the role of agencies legally charged with determining what science says about threats to health and safety while bringing OIRA’s influence more into line with its limited legal mandate.

Science Integrity: Agencies Contracting Out to Firms and Conflicts of Interest: Over the last decade, federal agencies have contracted out more and more of their science work to private firms. Those same firms often work for one of the regulatory agencies and simultaneously for companies subject to regulation by those agencies. Two questions emerge: (1) why is the government contracting out science work that the agencies are qualified to do, and (2) are agencies taking adequate steps to guard against conflicts of interest that might lead contractors to skew their findings back to the agencies? The Committee will continue its work in this area in the 111th Congress.

B. Helping to Ensure that Programs are Well Managed and that Money is Properly Spent

Taxpayers expect that programs they fund be well managed and that the dollars they pay for those programs represent the best value for the money. The Committee will review the financial accounting and contract management practices of its agencies to insure that they keep track of the moneys they receive and engage with contractors in a way that is efficient and complies with the law.

When agencies have weak financial management systems (as found at the Department of Energy and NASA), they have a difficult time assuring the Congress and the public that their moneys are well managed and appropriately allocated. Financial management failures
reflect not just a hollow accounting exercise, but a fundamental inability to certify to the public that moneys are well managed.

When contracting practices of agencies are flawed, it reflects a fundamental failure to assure that the Government is getting the best price for a good or service and that contractors are being paid solely for work that they actually do for the Government. With more and more Federal discretionary money going to contractors, management failures with contractors undermines the Government’s ability to attest that taxpayers are getting what they pay for.

Specific examples of work the Committee expects to pursue include the following:

**Contractor Review Initiative:** The Committee is undertaking a broad review of who has received contracts for what goods or services from its agencies. The Committee will examine whether the contracts were awarded competitively, whether the contracts are for services the government should itself provide, whether there are authentic acquisitions and whether real cost savings are realized.

**Stimulus Oversight Initiative:** Several agencies in the Committee’s jurisdiction (NSF, Department of Energy, NASA, NOAA, NIST) are in line to receive significant funding from an economic stimulus package. Assuming that package is enacted, it is the Committee’s intention to carefully monitor how the agencies ramp up funding and how effectively and efficiently the moneys are managed. The Committee will harness the resources of GAO and the Inspectors General, as appropriate, to carry this project forward.

**National Polar Orbiting Environmental Satellite System Mismanagement:** The Obama Administration inherited a program that has been mismanaged, with the budget approximately $5 billion over the original program estimates, and the capabilities of the satellites in line for launch severely degraded. The Committee has been pursuing oversight work into the conduct of the contractors and disarray among the agencies involved in the acquisition (USAF, NOAA, NASA). The Committee will work with the new Administration to try to ensure that there is data continuity in essential weather and climate change data sets.

**Computer System Acquisition Reform:** More than $100 billion is spent each year on computer systems acquisitions by the Federal government, and very few of these acquisitions are done on time or on budget. The Committee has come across two examples on the intelligence or homeland security side of computer acquisitions where
those acquisitions have been mismanaged and the programs are in jeopardy—potentially wasting hundreds of millions of dollars. The Committee will continue working on this issue with a broad eye to how the Government can better acquire these systems.

DHS S&T Directorate Laboratories: In the 110th Congress the Committee succeeded in forcing DHS to keep open the Environmental Measurements Laboratory (EML), a world renowned radiation measurements laboratory. The Committee held a hearing on the weak Federal infrastructure of Federal radiation labs and their current inability to respond to the public health implications of a large scale radiation release. The unique capabilities of DHS labs to perform critical research have been weakened. Much of the work has been outsourced to contractors, resulting in an exodus of good Federal employees from the labs, and the labs themselves have been underfunded and neglected. The Committee will continue its work on the DHS S&T laboratory complex.

EPA Laboratories: EPA has a network of laboratories that perform research and support enforcement, monitoring and remediation activities of the Agency. Recent reports by the EPA Science Advisory Board suggest that EPA’s research budgets are inadequate and that the scope of research supported by the Agency is too narrow to identify and prepare for emerging environmental and public health challenges. The Committee intends to examine the current status of the EPA laboratories and ensure the network of facilities and EPA’s scientific and technical workforce are sufficient to serve the Agency’s public health and environmental protection mission. GAO work on this matter is underway.

Smart Grid Initiative: The Committee intends to conduct oversight of the new programs adopted in the Energy Independence and Security Act of 2007 to expand research, development, and demonstration of smart grid technologies and to ensure that appropriate equipment standards are in place to facilitate the deployment of smart grid technologies. The Committee also intends to monitor the progress of the National Institute of Standards and Technology’s (NIST) effort to build consensus on development of interoperability standards for smart grid devices and systems.

DOE Laboratory Complex: The management and upkeep of the Department’s aging facilities, particularly the clean-up of radioactive and hazardous material sites, remain a continuing concern of the Committee. Efforts will continue to assure that the Department meets its responsibilities to control risks in and around these facilities.
DOE Science programs: DOE, like NSF, plays a leading role in supporting U.S. physical science research. Budget limits are severely restricting these programs and limiting use of major facilities such as the Relativistic Heavy Ion Collider, the new Spallation Neutron Source and the Fermi National Accelerator Laboratory. Such cases raise questions about the decision to invest in such capabilities if the resources are not available to exploit them to the fullest. The Committee intends to continue exploring this area.

Energy Efficiency: Several new energy efficiency programs were authorized in the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007. The Committee will conduct oversight over new and existing energy efficiency programs including: industrial efficiency, building technologies, vehicle technologies, and DOE’s implementation of executive orders to improve energy efficiency at federal facilities.

NASA Contract, Financial and Program Management Challenges: The Government Accountability Office (GAO) has identified NASA contract management as a “high-risk” concern. In addition, the infrastructure for managing NASA’s financial activities has been undergoing a long and painful upgrade. GAO in the past has regularly stated it has seen little evidence that the new system allows NASA managers to control cost and schedule issues more effectively than in the past. The Committee intends to continue our oversight efforts in this area, with an eye to working with the new Administration to ensure that NASA’s programs are carried out as effectively as possible.

Balancing Space Science and Human Space Flight: Congress endorsed President Bush’s goals for space exploration in the National Aeronautics and Space Authorization Acts of 2005 and 2008. However, Congress also made clear in the Acts that it expected NASA to carry out a balanced set of activities in science, aeronautics and human space flight. Despite that congressional direction, however, NASA’s budget plans have been inadequate to accomplish all of these goals. The new Administration will be submitting its plans for NASA in the near future, starting with the Fiscal Year 2010 budget request. The Committee will devote significant time to an examination of the implications of NASA’s plans and priorities and the resource requirements of a balanced, robust and beneficial space and aeronautics program at NASA. As part of its NASA reauthorization effort, the Committee will be taking a close look at the Agency’s infrastructure requirements as well as the effectiveness of its programs.
FAA NextGen Initiative: The Committee has been actively monitoring FAA’s efforts to develop a next generation air transportation system (NextGen). The Committee has a particular interest in the performance of the interagency Joint Planning and Development Office (JPDO), which is responsible for planning and coordinating the initiative to develop NextGen. The NextGen initiative has a host of issues associated with it due to its costs and complexity, and the Committee has ongoing oversight activities to examine its status, including a request to GAO to review its progress. The Committee has legislative jurisdiction over FAA’s research and development programs, and the Agency’s authorization expired in 2007. The Committee will use its oversight work to inform the reauthorization of FAA’s R&D programs.

International Space Station: Given the significant national investment in the International Space Station (ISS), Congress has directed that NASA maintain a strong research and technology program to take advantage of those unique capabilities. However, NASA has made significant cuts to the programs for utilizing the ISS, virtually eliminating entire areas of life science and microgravity research. In addition, the impending retirement of the Space Shuttle raises questions about how NASA will support the utilization and operation of the ISS post-2010, even as NASA seeks commercial operators to undertake some portion of ISS logistical support. In addition, NASA has stated its intention to utilize the ISS to support its exploration initiative. The Committee expects to work closely with the new Administration to get clarity on what role the ISS will play and what it will cost to maintain it and utilize it.

NASA and Aviation Safety: The NASA aeronautics program has been restructured and its funding has been in decline for a number of years. The Committee plans to examine the impact of that restructuring and funding approach on NASA’s ability to support the interagency effort to modernize the nation’s air traffic management system, as well as on its ability to undertake important R&D on aircraft safety, emissions, noise and energy consumption—R&D that will have a big impact on our Nation’s quality of life and on U.S. competitiveness in aviation.

NASA’s Technology Development: As an R&D agency, long-term technological innovation should be a prime focus for NASA. However in recent years, constrained budgets and different priorities have diminished NASA’s role in technological innovation. The Committee intends to examine NASA’s activities in technology development and what needs to be done to maximize the effectiveness of its
investments; such investments can provide another boost to our economy's competitive position.

NSF Major Research Equipment and Facilities Construction (MREFC): The MREFC approval process at NSF is being restructured to put into place much better controls against cost and schedule overruns. The Committee will be watching closely how the new controls are implemented from conceptual design through operation for the next round of research facilities.

C. Evaluating Programs and Identifying Emerging Challenges

Many of the program initiatives under the Committee's purview have either been badly managed or else will soon face a cross-roads regarding how to proceed and whether to commit millions, perhaps billions of dollars to a particular path. The Committee believes it is prudent to carefully monitor the way these programs are managed to help inform decisions.

Similarly, it is important to stay alert for problems on the horizon that may not have crystallized yet either in the form of existing programs or policies. For example, knowing that a changing climate is contributing to unprecedented changes in the earth's atmosphere with profound consequences for every form of life is not by itself a program or a policy, but that is exactly the kind of emerging science-based set of challenges that the Congress and the Government need to wrestle with. The Committee on Science and Technology hosted the first hearings on climate change in the early 1980s. That work ultimately led to the Committee establishing the Global Climate Change Research Act of 1990, providing the legal framework for climate science ever since. Identifying emerging challenges is an important way for Congress to adopt the new laws and authorities necessary to respond to a changing world.

The work in this category that the Committee intends to undertake includes:

Carbon Capture and Sequestration Technologies and Reorienting FutureGen: FutureGen was radically restructured in January 2008 by Secretary of Energy Bodman. Internal DOE documents demonstrate the restructured program would add an estimated ten years to achieving the goal of having commercially scalable Carbon Capture /Carbon Sequestration technologies in the marketplace. This would have a devastating impact on our ability to burn coal without adding to global warming. The Committee is prepared to work with the next Administration to reorient the program towards goals that hold out the
promise to make our Nation's coal reserves a safe and clean source of energy.

The National Aviation Operational Monitoring System (NAOMS): The Committee has done work on the National Aviation Operational Monitoring System and also on wiring and fire hazards in aging planes. The Committee will continue to work on this issue, based on any new information that emerges. GAO is due to deliver a report on NAOMS in coming weeks.

Environmental Justice: EPA has failed to finalize environmental justice analytical requirements for use by the Agency (and others) in evaluating the environmental impact of proposed facilities from an environmental justice perspective. The Committee proposes to work with the new Administration to establish sound ground rules for environmental justice calculations.

Alternative Energy Supplies: Volatility in oil prices is increasing interest in new fuel types for meeting the country’s energy needs. Special attention is being given to biomass substitutes such as ethanol. The Department of Energy (DOE) helps to develop technologies for this purpose. Questions have been raised about the net energy efficiency gains and economic impacts of using food products as fuel. The Committee intends to pursue these questions in the 111th Congress.

Oceans Agenda: The 2004 Ocean Commission Report included over two hundred recommendations to address the future of our oceans. The Bush Administration offered a Plan in response to the Report, but many of the Commission's recommendations have not yet been addressed. Since that time, new challenges, including ocean acidification, have emerged. The Committee will examine the current status of ocean research and development, exploration and monitoring programs, and assure they are able to deliver the information and tools needed to manage global ocean resources responsibly.

Reviving Nuclear Power: Proponents argue that nuclear power offers an attractive solution to the problem of finding low-carbon power sources to mitigate greenhouse gas impacts. Public skepticism about the safety and economic value of such plants, however, remains high. DOE, the Nuclear Regulatory Commission and the power industry hope to restart reactor construction in the near future. The Committee will examine their readiness to do so and the status of proposed technologies.
Clean Coal Technology: The United States still has a massive reserve in coal to use for energy. Finding ways to remove impurities that contribute to air pollution, and then to reduce or sequester the resulting carbon dioxide emissions that contribute to climate change, may allow coal to continue its contribution as a relatively inexpensive fuel source. The Committee will continue to explore this area, and will coordinate that effort with our ongoing investigation into the management of the FutureGen project.

Fusion and the ITER Demonstration: Technical challenges have for decades hampered our ability to harness nuclear fusion as an energy source. The United States has recently rejoined an international consortium preparing to construct the International Thermonuclear Experimental Reactor to demonstrate whether fusion could be produced in an economically viable manner. Committee Members supported the decision to participate and will follow this multi-billion dollar project’s progress.

NASA Earth Science Program Continuity and Effectiveness: NASA’s science programs will also be an important oversight area for the Committee. One area of focus in particular will be NASA’s Earth science/climate research programs. NASA currently accounts for approximately 60 percent of the Nation’s climate research funding. The Committee intends to examine the effectiveness of those investments, the research outcomes being sought, and the extent to which NASA is effectively coordinating with NOAA and international agencies on its Earth science/climate research to insure there is no unnecessary duplication of effort.

Workforce Transition Issues: Like many other Federal agencies, NASA faces an aging workforce. However, the challenges to NASA are unique due to the five-year gap between the retirement of the Space Shuttle and the roll-out of the new CEV/CLV system. This could have disruptive consequences on the capacity of the agency to retain the best professionals needed to safely and successfully fly the remaining Shuttle flights, or to attract new talent to tend the Agency’s mission between vehicles. The Committee will explore this situation, and its implications, further.

FAA Commercial Space Transportation: FAA’s Office of Commercial Space Transportation (OCST) licenses commercial launch vehicles. An area of increasing interest is the emergence of a number of fledgling commercial human space flight ventures. In addition to its oversight of the FAA’s OCST, the Committee will examine the progress of the emerging personal space flight industry as well as the challenges facing it.
International Space Cooperation and Competition: A growing number of nations are acquiring space exploration and utilization capabilities. That offers both increased opportunities for cooperation as well as potential geopolitical and commercial competition. The Committee intends to examine the status of the emerging space powers and the impact on U.S. space policies.

National Space Council: The incoming Administration has indicated its intention to reactivate the National Aeronautics and Space Council (NASC) to address interagency space and aeronautics issues. The efficacy of the NASC in past Administrations has been mixed, and the Committee intends to monitor its effectiveness as it carries out its activities under the current Administration.

National Science Foundation Oversight: The National Academies' Gathering Storm report highlighted the importance of science funding in building a globally competitive economy. The Committee anticipates that the new Administration will seek to expand funding for these programs, and the Committee will devote significant time to reviewing the agency's relevant programs to ensure that increases are well managed. This work will inform a reauthorization of the Agency.

Science and Mathematics Education: Education is a vital component in a growing economy. Members of the Committee have intense interests in efforts to improve the teaching of Science, Technology, Engineering and Mathematics (STEM) subjects. The Committee will continue its work to determine the most effective forms of Federal support for STEM education, including examining ways to improve coordination and quality of science education programs (and to identify redundancies) across Federal STEM programs.

U.S. Antarctic Program: Since 1959, the U.S. has conducted operations on the Antarctic continent under the terms of the Antarctic Treaty System. Research there has been central to actions on protecting the Earth's stratospheric ozone layer and is likely to be critical to pending Congressional consideration of climate change issues. Of immediate interest is the future of the icebreaker fleet that provides vital logistical support for NSF's activities in the harsh polar environment.

Balancing Security and Competitiveness in a Complex World: Agencies and universities are debating the level of scrutiny and control that should be applied to research in light of the possible use of new findings by terrorists or by industrial or international competitors. At the same time, many in industry question the value of controls on
technology sales, arguing that such controls disproportionately limit American firms in competition for global sales. How to balance these competing values remains a complex subject for Committee oversight.

**Computer Network Security and Innovation:** Federal research provided the foundation for the Internet as we know it today. The Committee intends to review the existing research programs in computer networking with a focus on improving performance in next-generation networks, lowering costs to consumers while expanding access and enhancing capabilities to support improved services. Reflecting the Net's transformation into a critical infrastructure, the Committee will also promote efforts to weave security into the Internet's fabric to safeguard the economic and communication services on which our society now relies.

**Health Information Technology Standards:** Real improvements in the costs and accuracy of health care can come through enhanced integration of health data with IT systems. NIST has a critical role to play through setting standards for data sharing across systems, as well as standards that will protect patient privacy. The Committee has been active in this area and will continue to work to insure that the Nation realizes the gains in efficiency and safety implicit in an effective roll out of Health IT.

**Transportation Research and Development:** The Committee will continue to review R&D conducted by the Department of Transportation. DOT R&D is designed to enhance the efficiency, and safety, of our transportation systems. While we look for energy savings through Department of Energy programs, the Committee also expects that DOT can contribute to meeting our Nation’s energy needs.

**International Standards:** The Committee is aware that the Nation’s competitive position can be dramatically improved, or weakened, depending on how international standards for different products and processes are developed. NIST is not the only Federal agency working in this arena, and the Committee is concerned that cooperation across agencies is less than optimal. It is the Committee’s intention to review the Government’s effectiveness in international standard setting with a focus on collaboration across Federal agencies. Those agencies include NIST, the United States Trade Representative, the Federal Communications Commission and the Department of State.

**Bayh-Dole Technology Transfer Act:** The Committee began reviewing the Bayh-Dole Act in the 110th Congress. The Committee
will continue that review. There is concern that Bayh-Dole is not providing sufficient innovation moving from Universities to the private sector. Further, new relationships that have emerged between particular firms and universities calls into question whether aspects of the Bayh-Dole Act need to be updated. The Committee will review this law’s implementation with an eye for elements that are out-of-date or producing unintended consequences.

U.S. Fire Administration: The Committee has always been active in overseeing this program. USFA is responsible for the Assistance to Firefighters grant program. Much of the training for firefighters, especially volunteer departments, has historically come through USFA. The Committee remains committed to overseeing the implementation of the USFA to guarantee that firefighters get the best support and training that the Government can provide.

III. Working with Outside Oversight Authorities

The Committee maintains a rich relationship with its Inspectors General and the GAO. The Committee will continue to work with those offices, particularly to ensure accountability in those programs receiving funding increases as part of any economic stimulus package. This is particularly important in light of the new Rule XI (Tanner Amendment) language emphasizing collaborative relationships with GAO and IGs, relying on them to identify major mismanagement issues, using their reports in hearings, and working with the High Risk Series published by GAO to guide hearings and inquiries.

A. The Government Accountability Office

The Committee works closely with GAO. In the 110th Congress, GAO testified before the Committee on at least 12 occasions, and provided the Committee with 42 reports (see Appendix C) on activities within our jurisdiction.

The Committee has many outstanding requests for work with GAO. The Committee already has 30 requests, made during the 110th Congress, for reports that will be completed in the 111th Congress (see Appendix D). More will be developed as appropriate. Many of these requests are bipartisan or cross-Committee, which reflects the collaborative nature of much of the Committee’s oversight work.

The High Risk series is issued by GAO every two years. This series represents the Government Accountability Office’s best judgment about where the risk to program integrity and federal dollars is the highest. One issue developed by the Committee in the last Congress
has been added to the list for this new Congress: the Integrated Risk Information System (IRIS) program at EPA. The Committee will continue to work on this matter. Investigations and Oversight Chairman Brad Miller, who has held two hearings on the subject, has developed legislation, first dropped in the 110th Congress, to try to redress the failures by EPA to set up a reasonable system for publishing science-based updates of the health risks of particular chemicals.

Several other issues highlighted in the just-released High Risk update for 2009 fall into the Committee’s legislative or oversight jurisdiction (See Appendix E for a full accounting of those issues that appear to be in the Committee’s jurisdiction). In particular, their focus on NASA’s contract, finance and management problems deserves a separate hearing by the Committee or an appropriate Subcommittee.

B. Inspectors General

The Committee regularly consults with the offices of its inspectors General to stay current on their work plans and relevant findings. Just in the last two months the Committee has initiated oversight activities aimed at personnel matters and document destruction in two of the Committee’s agencies. Those cases have involved significant, discrete communication with the IG’s of the respective agencies, using their offices to help with background information and fact-checking.

The DOE IG is opening an audit of records retention training and policies based on the information the Committee shared with that office regarding one of these cases.

The Committee has also been very aggressive in pursuing allegations of misconduct by the NASA Inspector General, Mr. Robert “Moose” Cobb. The Committee worked with other IGs, the General Accounting Office and the President’s Council on Integrity and Efficiency in an investigation of Mr. Cobb’s conduct. The Committee feels very strongly about protecting the independence and integrity of its Inspectors General and will make sure that future IGs represent strong, independent voices who understand they have an obligation to work with the Congress.

The Committee used its expertise on IG issues to help strengthen the IG reauthorization passed by the House in the summer of 2007. Provisions the Committee sought for inclusion in the bill were included in the final bill passed by the Congress.

C. Whistleblowers
The Committee has developed many relationships with whistleblowers in agencies. The Committee has taken positive steps to try to protect them from retaliation and has been reasonably successful in that role. Most of the whistleblowers who come to the Committee remain anonymous—sometimes even from the Committee. A few whistleblowers have become public figures in debates relating to integrity of science. All of them are owed a debt of gratitude by the Congress and the public.

The Committee will retain its open-door policy regarding whistleblowers, whether they are contractors or Government employees, and they should rest assured that we will never betray a confidence. Even if the information offered turns out not to be useful, as sometimes happens, the Committee will remain a haven for such figures and we understand the absolute necessity for citizens to feel safe in their communications with Congress.
Appendix A
House Rules Establishing the Jurisdiction of the Committee on Science and Technology
RULE X
ORGANIZATION OF COMMITTEES

Committees and their legislative jurisdictions

1. There shall be in the House the following standing Committees, each of which shall have the jurisdiction and related functions assigned to it by this clause and clauses 2, 3, and 4. All bills, resolutions, and other matters relating to subjects within the jurisdiction of the standing Committees listed in this clause shall be referred to those Committees, in accordance with clause 2 of rule XII, as follows:

(o) Committee on Science and Technology.

(1) All energy research, development, and demonstration, and projects therefor, and all federally owned or operated nonmilitary energy laboratories.

(2) Astronautical research and development, including resources, personnel, equipment, and facilities.

(3) Civil aviation research and development.

(4) Environmental research and development.

(5) Marine research.

(6) Commercial application of energy technology.

(7) National Institute of Standards and Technology, standardization of weights and measures and the metric system.

(8) National Aeronautics and Space Administration.

(9) National Space Council.

(10) National Science Foundation.

(11) National Weather Service.

(12) Outer space, including exploration and control thereof.

(13) Science Scholarships.

(14) Scientific research, development, and demonstration, and projects therefor.

Special oversight functions

3(k) The Committee on Science and Technology shall review and study on a continuing basis laws, programs, and Government activities relating to nonmilitary research and development.
Appendix B
Committee Oversight Correspondence in the 110th Congress
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<th>Date/Event</th>
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Science Technology Committee 110th Oversight Correspondence
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<td>Draft Report, Public Health Implication of Risks from Solar Flares in the U.S.</td>
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Appendix C

GAO Reports Delivered During the 110th Congress
### Document Information:

- **Document**: Unrestricted
- **Accession Number**: A84902
- **Product Number**: GAO-09-88
- **Product Title**: Inspectors General: Actions Needed to Improve Audit Coverage of NASA
- **Publication Date**: 12/18/2008

### Addresses/Requestors/Witnesses/Interested Committees:

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### Additional Document Information:

- **Document**: Unrestricted
- **Accession Number**: A84715
- **Product Number**: GAO-09-37
- **Product Title**: Aviation and the Environment: Initial Voluntary Airport Low Emissions Program Projects Reduce Emissions, and FAA Plans to Assess the Program's Overall Performance as Participation Increases
- **Publication Date**: 11/07/2008

### Addresses/Requestors/Witnesses/Interested Committees:

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**Document Information:**
- **Class:** Unrestricted
- **Accession Number:** A84582
- **Number:** GAO-09-130R
- **Product Title:** Responses to Questions for the Record: September 2008 Hearing on the Next Generation Air Transportation System: Status and Issues
- **Publication Date:** 10/20/2008

**Addresses/Requesters/Witnesses/Interested Committees:**
- Rep. Bart Gordon, Chairman | House Committee on Science and Technology | x | x | x |

**Document Information:**
- **Class:** Unrestricted
- **Accession Number:** A84455
- **Number:** GAO-09-1096
- **Product Title:** NASA: Agency Faces Challenges Defining Scope and Costs of Space Shuttle Transition and Retirement
- **Publication Date:** 09/20/2008

**Addresses/Requesters/Witnesses/Interested Committees:**
- Sen. Barbara A. Mikulski, Chairman | Senate Committee on Appropriations: Commerce, Justice, and Related Agencies Subcommittee | x | x | x |
- Sen. Richard C. Shelby, Ranking Minority Member | Senate Committee on Appropriations: Commerce, Justice, and Related Agencies Subcommittee | x | x | x |
- | House Committee on Appropriations: Commerce,
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Document
- Class: Unrestricted
- Accession: AA4383
- Number: GAO-08-1114
- Product Title: Motor Fuels: Stakeholder Views on Compensating for the Effects of Gasoline Temperature on Volume at the Pump
- Publication Date: 09/25/2008

Addresses/Requestors/Witnesses/Interested Committees:

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Document
- Class: Unrestricted
- Accession: AA4326
- Number: GAO-09-1109R
- Product Title: Combating Nuclear Smuggling: DHS's Program to Prevent and Deploy Advanced Radiation Detection Portal Monitors Is Likely to Exceed the Department’s Previous Cost Estimates
- Publication Date: 09/18/2008

Addresses/Requestors/Witnesses/Interested Committees:

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- **Class:** Unrestricted
- **Accession:** A84133
- **Number:** GAO-08-134T
- **Publication Date:** 09/11/2008

**Address/Requestors/Witnesses/Interested Committees:**

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**Document Information:**

- **Class:** Unrestricted
- **Accession Number:** A4128
- **Product Number:** GAO-09-920R
- **Product Title:** NASA Workforce: Briefing on National Aeronautics and Space Administration’s Use of Term Appointments
- **Publication Date:** 09/10/2008

**Addressers/Requestors/Witnesses/Interested Committees:**

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### Environmental Satellite: Polar-orbiting Satellite Acquisition Faces Delays; Decisions Needed on Whether and How to Ensure Climate Data Continuity

**Publication Date:** 06/19/2008

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### Department of Energy: Office of Science Has Kept Majority of Projects within Budget and on Schedule, But Funding and Other Challenges May Grow

**Publication Date:** 05/30/2008

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### Chemical Assessments: EPA’s New Assessment Process Will Further Limit the Productivity and Credibility of Its Integrated Risk Information System

**Publication Date:** 06/21/2008

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#### Document:
- **Class:** Unrestricted
- **Accession:** AB1923
- **Number:** GAO-09-518
- **Product Title:** Environmental Satellites: Polar-orbiting Satellite Acquisition Faces Delays; Decisions Needed on Whether and How to Ensure Climate Data Continuity
- **Publication Date:** 05/16/2008

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- **Class:** Unrestricted
- **Accession:** AB1864
- **Number:** GAO-09-981T
- **Product Title:** NASA: Challenges in Completing and Sustaining the International Space Station
- **Publication Date:** 04/24/2008
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### Document: Environmental Protection: EPA Needs to Follow Best Practices and Procedures When Reorganizing Its Library Network

**Publication Date:** 03/13/2008

**Committee/Agency:** House Committee on Science and Technology: Investigations and Oversight Subcommittee

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### Document: Advanced Energy Technologies: Budget Trends and Challenges for DOE’s Energy R&D Program

**Publication Date:** 03/05/2008

**Committee/Agency:** House Committee on Science and Technology: Energy and Environment Subcommittee

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## Environmental Protection: EPA Needs to Ensure That Best Practices and Procedures Are Followed When Making Further Changes to Its Library Network

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## Aviation and the Environment: FAA’s and NASA’s Research and Development Plans for Noise Reduction Are Aligned, but the Prospects of Achieving Noise Reduction Goals Are Uncertain

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**Document Class**: Unrestricted

**Accession Number**: GA0-08-384

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### Document Information:
- **Unrestricted**
- **Accession Number:** AP7010
- **Product Number:** GAO-08-258
- **Title:** Aviation Weather: FAA Is Reevaluating Services at Key Centers; Both FAA and the National Weather Service Need to Better Ensure Product Quality
- **Publication Date:** 01/11/2008
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**Document Details:**
- **Case:** Unrestricted
- **Accession Number:** A79028
- **Product Number:** GAO-08-42
- **Publication Date:** 12/18/2007

**Addressed/Requestors/Witnesses/Interested Committees:**

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Document Class: Unrestricted
Accession: A78670
Number: GAO-08-70
Product Title: ODE Schools: Additional Reporting Could Improve Accountability for Academic Achievement of Students with Dyslexia
Publication Date: 12/06/2007

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Document Class: Unrestricted
Accession: A77800
Number: GAO-08-51
Product Title: NASA: Agency Has Taken Steps Toward Making Sound Investment Decisions for Areas I but Still Faces Challenging Knowledge Gaps
Publication Date: 10/21/2007

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**Document Class:** Unrestricted

**Accession Number:** A77527

**Product Number:** GAO-08-183T


**Publication Date:** 10/23/2007

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**Document Class:** Unrestricted

**Accession Number:** A77536

**Product Number:** GAO-08-18


**Publication Date:** 10/23/2007
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Document Class: Unrestricted
Accession Number: A73269
Product Number: GAO-07-940

Product Title: NASA Supplier Base: Challenges Exist in Transitioning from the Space Shuttle Program to the Next Generation of Human Space Flight Systems
Publication Date: 07/15/2007

Document Class: Unrestricted
Accession Number: A73212
Product Number: GAO-07-13217

Product Title: NASA: Challenges in Completing and Sustaining the International Space Station
Publication Date: 07/24/2007

Document Class: Unrestricted
Accession Number: A73008
Product Number: GAO-07-691

Product Title: Business Modernization: NIH Must Consider Agencywide Needs to Reap the Full Benefits of Its Enterprise Management System Modernization Effort
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Document Class: Unrestricted
Accession Number: A71431

Product Title: Property Management: Lack of Accountability and Weak Internal Controls Leave NASA Equipment Vulnerable to Loss, Theft, and Misuse

Publication Date: 06/25/2007

### Addresses/Requestors/Witnesses/Interested Committees:

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Document Class: Unrestricted
Accession Number: A70499


Publication Date: 06/08/2007
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- **Class:** Unrestricted
- **Accession Number:** A70427
- **Product:** GAO-07-910T
- **Product Title:** Polar-Orbiting Operational Environmental Satellites: Restructuring Is Under Way, but Challenges and Risks Remain
- **Publication Date:** 06/07/2007

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### Document:

- **Class:** Unrestricted
- **Accession Number:** A70035
- **Product:** GAO-07-918R
- **Product Title:** Responses to Questions for the Record; Hearing on JPPO and the Next Generation Air Transportation System: Status and Issues
- **Publication Date:** 05/28/2007

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### Polar-Orbiting Operational Environmental Satellites: Restructuring Is Under Way, but Technical Challenges and Risk Remain

**Publication Date:** 04/27/2007

**Addresses/Requestors/Witnesses/Interested Committees:**

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### Joint Planning and Development Office: Progress and Key Issues in Planning the Transition to the Next Generation Air Transportation System

**Publication Date:** 03/22/2007

**Addresses/Requestors/Witnesses/Interested Committees:**

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Rep. Vernon J. Ehlers
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Document:
Class: Unrestricted
Accession: A66124
Number: GAO-07-333R

Product Title: Biological Research Laboratories: Issues Associated with the Expansion of Laboratories Funded by the National Institute of Allergy and Infectious Diseases
Publication Date: 02/22/2007

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Document:
Class: Unrestricted
Accession: A66921
Number: GAO-07-58

Product Title: NASA Procurement: Use of Award Fees for Achieving Program Outcomes Should Be Improved
Publication Date: 01/17/2007

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Class: Unrestricted
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## Document Details:

- **Class:** Unrestricted
- **Accession Number:** A60322
- **Product Number:** GAO-06-993

## Product Details:

- **Product Title:** GeoSatellite: Operational Environmental Satellites: Steps Remain in Incorporating Lessons Learned from Other Satellite Programs
- **Publication Date:** 09/06/2006

## Document Details:

- **Class:** Unrestricted
- **Accession Number:** A56981
- **Product Number:** GAO-06-792
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Appendix D
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**GAO PENDING REQUESTS AND ACTIVE ASSIGNMENTS AS OF 12/1/2009**

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**GAO PENDING REQUESTS AND ACTIVE ASSIGNMENTS AS OF 12/1/2009**

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**GAO PENDING REQUESTS AND ACTIVE ASSIGNMENTS AS OF 1/21/2009**

**HSE COM SCIENCE & TECHNOLOGY**

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*Note: Data Updated - Annual, Semi-Annual, Ongoing, Other; G-Grant, R=Report, I=Interagency, N=Non-HHS, E=Estimative, O=Other, Q=Quarterly*
### GAO Pending Requests and Active Assignments as of 1/21/2009

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*Legend: FA=Fast; HA=High; MA=Mid; SA=Slow; AN=Annual; DT=One Time; CT=Continuous; N=Not Specified; O=Other; Q=Quarterly*
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<td>EVALUATE EFFORTS TO ENSURE PERFORMANCE OF THE CURRENT WEATHER SERVICE</td>
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*Note: Freq: Frequency; AV=Annual; S=2 Semi-Annual; CT=One Time; CT=Contingent; NO=Not Specified; OR=Other; QU=Quarterly

Date/Order Date: CT=Contingent; NO=Not Specified

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## GAO Pending Requests and Active Assignments As of 1/21/2009

### Pending Requests/Mandates

<table>
<thead>
<tr>
<th>Request</th>
<th>Date</th>
<th>Subject</th>
<th>Team</th>
<th>Director/Assistant Director</th>
<th>Deferred</th>
<th>Start Date</th>
<th>All Copies of Request</th>
</tr>
</thead>
</table>

### Active Requests/Mandates

<table>
<thead>
<tr>
<th>Request</th>
<th>Date</th>
<th>Subject</th>
<th>Team</th>
<th>Director/Assistant Director</th>
<th>Estimated Issuance</th>
</tr>
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<tbody>
<tr>
<td>08-0441-01</td>
<td>12/24/2008</td>
<td>Analysis of Data Collected by National Aviation Operational Monitoring Service (ENROSS)</td>
<td>P</td>
<td>Spievak, Michael B.</td>
<td>11/1/2009</td>
</tr>
</tbody>
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### NASA Aviation Safety Survey

<table>
<thead>
<tr>
<th>Request</th>
<th>Date</th>
<th>Subject</th>
<th>Team</th>
<th>Director/Assistant Director</th>
<th>Estimated Issuance</th>
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*Notes: (Date) Frequency: (W)Weekly, (M)Monthly, (S) Semiannual, (Q) 1st Quarter, (2Q) 2nd Quarter, (3Q) 3rd Quarter, (4Q) 4th Quarter, (OM) Other, (NA) Not Applicable*
Appendix E
Summary of 2009 “High Risk” Topics
<table>
<thead>
<tr>
<th>GAO Item Title</th>
<th>Possible Oversight Action</th>
</tr>
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<tbody>
<tr>
<td>Modernizing the Outdated U.S. Financial Regulatory System</td>
<td>Included among GAO’s “nine characteristics that should be reflected in any new regulatory system” are “[m]echanisms ... for identifying, monitoring, and managing risks to the financial system.” Large financial institutions’ reliance on proprietary risk-assessment models to determine the adequacy of their capital has been increasing, and it is soon to be institutionalized in the U.S. under an international agreement, Basel II. Federal regulators’ role will then be to “validate” the institutions’ models, but whether they – or, in fact, anyone, anywhere – possess the mathematical expertise to perform this task is questionable. Risk assessments, modeling and technical evaluations of those are all in the jurisdiction and expertise of the Committee.</td>
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<tr>
<td>Transforming EPA’s Processes for Assessing and Controlling Toxic Chemicals</td>
<td>GAO reiterates in the 2009 High-Risk Series Update its 2008 finding that EPA’s Integrated Risk Information System (IRIS) – a database that contains EPA’s scientific position on the potential human health effects of exposure to more than 540 chemicals – is at serious risk of becoming obsolete. EPA has not been able to complete timely, credible assessments. “Without greater attention to EPA’s efforts to assess toxic chemicals, the nation lacks assurance that human health and the environment are adequately protected.” The I&amp;O Subcommittee has held hearings on IRIS in the past and would continue to oversee this important database.</td>
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<td>2010 Census</td>
<td>GAO designated the 2010 Census “high-risk” in March 2008 largely due to problems with the Census Bureau’s information technology (IT) acquisition management practices that have increased the cost of the project to more than $14 billion. This is one of many problematic IT programs the Subcommittee may look into that reflect Federal IT acquisition deficiencies.</td>
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<tr>
<td>Strategic Human Capital Management</td>
<td>GAO singles out Strategic Human Capital Planning as an area offering “ample opportunity” for federal agencies to improve. It says: “Strategic human capital planning that is integrated with broader organizational strategic planning is critical to ensuring agencies have the talent and skill mix they need to address their current and emerging human capital challenges.” This is an issue at many of our agencies, particularly NASA.</td>
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<td>Protecting the Federal Government’s Information Systems and the Nation’s Critical Infrastructures</td>
<td>The U.S.’s critical infrastructure – including power distribution systems, national defense, water supply, emergency services, and telecommunications – relies extensively on computerized information systems and electronic data in normal operations. Federal agencies have made progress in strengthening information security, yet “most agencies continue to experience significant deficiencies that jeopardize the confidentiality,</td>
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<th>Implementing and Transforming the Department of Homeland Security</th>
<th>DHS remains on GAO’s High-Risk List owing to numerous management challenges and problems overseeing its $40 billion annual budget that GAO has identified, particularly in DHS’s acquisitions and R&amp;D programs. The Committee has jurisdiction over the agency’s Science and Technology Directorate and will continue to review its programs, focusing on its laboratories and contracts. Problems GAO has identified at DHS also include its IT-related acquisitions, which the Committee also has a role in reviewing.</th>
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<tr>
<td>Establishing Effective Mechanisms for Sharing Terrorism-Related Information to Protect the Homeland</td>
<td>Since 9/11 there have been significant efforts among federal, state, and local partners to share terrorism-related data. These efforts are now being developed under an overarching Information Sharing Environment (ISE). Still, GAO “found that the scope, projects, and milestones—the road map—for guiding the future ISE were not fully defined and, along with OMB, observed that the expected results and metrics—the system of accountability—to ensure progress were not in place.” It is the Committee’s role to oversee federal computer standards, including such efforts.</td>
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<td>Ensuring the Effective Protection of Technologies Critical to U.S. National Security Interests</td>
<td>GAO calls for a “fundamental re-examination of current government programs” to determine how agencies involved in protecting “critical technologies while advancing U.S. interests” – including the Department of Commerce – can “collectively achieve their mission.” At stake are not only such concerns as the proliferation of nuclear weapons, but also the issue of whether the U.S. has maintained under its control the technologies and production capacity that may be critical to its defense base and economic security. Both manufacturing and competitiveness, including national technological leadership, are within the Committee’s jurisdiction.</td>
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<td>Department of Energy’s Contract Management for the National Nuclear Security Administration and Office of Environmental Management</td>
<td>GAO found that the Department of Energy’s Office of Science has been extremely effective in completing large projects within budget and schedule requirements, which it attributes to leadership commitment, good management and technical expertise, and strict adherence to project management policies. It may be fruitful to see how DOE could copy the lessons from the Office of Science to these other divisions.</td>
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<td>National Aeronautics and Space Administration</td>
<td>NASA, which conducts virtually all its business under contract with outside entities, appears unable to finish its projects at the</td>
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<td>Acquisition Management</td>
<td>GAO cautions that organizational and programmatic pressures could derail NASA's otherwise promising corrective action plan, which GAO feels might finally address many of the issues keeping NASA on the High-Risk List. Experience has shown that close and continued attention by the Committee to these management issues can increase the likelihood of change at NASA. Because NASA and DOD employ the same acquisition processes, there should be an opportunity to consider applying at NASA changes identified in work on the DOD High-Risk items. Similarly, lessons learned here might be applied at other agencies trying to develop and implement complex technical systems.</td>
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Findings of the Chairman of the Committee on Science and Technology Pursuant to H.Res. 1493

September 15, 2010

Bart Gordon of Tennessee
Chairman
Committee on Science and Technology

Madam Speaker,

I am submitting, pursuant to House Resolution 1493, changes in law that could help achieve deficit reduction by reducing waste, fraud, abuse, and mismanagement; promoting efficiency and reform of government; and controlling spending within Government programs for which the Committee on Science and Technology has primary authorizing authority. The specific measures listed below are pending before Congress. If enacted, these measures would reduce government waste, promote efficiency, and help to control spending within Government programs.

Coordination and Non-Duplication —

One of the recurring legislative themes for the Science and Technology Committee during the 111th Congress has been coordination and non-duplication. In tough budgetary times, it is vital that precious Federal research dollars not be spent on duplicative programs. Unfortunately, the coordinating activities necessary to prevent duplicative research efforts have been surprisingly lacking both across the Federal government and within individual agencies. To ensure that Federal research expenditures are most effective, the Committee included coordination requirements in several bills this Congress.

The first example of this theme was the House passage of the National Nanotechnology Initiative Amendments Act of 2009 (H.R. 554) on February 11, 2009. The National Nanotechnology Initiative (NNI) is an effort to coordinate over 1.7 billion dollars in annual Federal nanotechnology research expenditures across 15 separate agencies. The 2009 bill is an update to the existing program which should strengthen the interagency coordination and oversight functions of NNI.

Interagency coordination was also the driving premise behind H.R. 1145, the National Water Research and Development Initiative Act of 2009, which passed the House on April 23, 2009. The purpose of this bill is to create a Federal initiative to coordinate the Government’s efforts in research and development related to water resources. This is another field of inquiry in which multiple Federal agencies are involved, but where little effort has been expended to date to determine if these efforts are complementary or duplicative. H.R. 1145 would remedy this by bringing each of these agencies together, along with the Office of Science and Technology Policy (OSTP), to develop a National Water Research and Assessment Plan to coordinate water research across the Federal Government.
The Committee’s efforts to coordinate Federal Government activities also extended to the field of Science, Technology, Engineering, and Math (STEM) education in H.R. 1709, the STEM Education Coordination Act of 2009, which passed the House on June 8, 2009. The purpose of H.R. 1709 is to establish a committee through the National Science and Technology Council with OSTP, to coordinate Federal programs and activities in support of STEM education across the Federal Government. The coordinating committee would also be charged with developing and periodically updating a strategic plan for STEM education to craft a more cohesive and effective Federal effort toward STEM education.

In H.R. 2020, the Networking and Information Technology Research and Development Act of 2009, the Committee updated the successful Networking and Information Technology Research and Development (NITRD) program to codify and emphasize the National Coordination Office to ensure coordination of the computing and information technology research of the 13 Federal agencies performing this type of work. The bill would also require the formulation of a strategic plan to set a coordinated direction for Federal information technology research. Additionally, the bill emphasizes communication with outside communities of interest in an effort to help ensure that Federal research investments in these areas compliment, rather than duplicate, private-sector investments in these areas.

The Committee also established an Interagency Coordinating Committee in its reauthorization of the National Earthquake Hazards Reduction Program and the Natural Windstorm Impact Reduction Program in H.R. 3820, the Natural Hazards Risk Reduction Act of 2010. The purpose of the committee is to ensure a coordinated approach in Federal research related to the earthquake and wind programs authorized in H.R. 3820. H.R. 3820 passed the House on March 2, 2010.

Finally, the Committee broadly addressed the issue of coordination of Federal efforts in the areas of research and development and STEM education in H.R. 5116, the America COMPETES Reauthorization Act of 2010, which passed the House on May 28, 2010. In addition to containing identical provisions as H.R. 554, H.R. 1709, and H.R. 2020, the COMPETES Act contained additional provisions dealing with coordination and non-duplication. Under Title VI of the bill, the Undersecretary for Science at the Department of Energy was given additional authority to coordinate energy technology research, development, and demonstration activities across the Department. There are also coordination provisions relating to the management of federal scientific collections and manufacturing research and development.

NASA Acquisition Reform

Over the course of the past several years, the Committee on Science and Technology has investigated deficiencies in the awarding of major NASA contracts, with a focus on the flawed awarding of the Space Communications Networks Services Contract. This contract award, worth 1.3 billion dollars, has been successfully protested to the Government Accountability Office twice, and significant concerns regarding NASA’s contract award management have been raised by these protests. To address these issues, the Committee devoted Title VIII of its 2010 NASA authorization (H.R. 5781) to acquisition management. Notably, this title attempts to avoid organizational conflicts of interest in major NASA acquisitions by prohibiting contractors providing systems engineering or technical assistance to NASA from competing for the underlying management or acquisition contract. Similar provisions applicable to the Department of Defense were included in the Weapon Systems Acquisition Reform Act of 2009. In an effort to control spiraling acquisition costs, Title VIII of H.R. 5781 also strengthens a prohibition on expenditure of funds for acquisitions which exceed a 30 percent cost growth.
Manufacturing Extension Partnership Management— 
As a component of the America COMPETES Reauthorization Act of 2010, the Committee included a provision requiring the Director of the National Institute of Standards and Technology (NIST) to conduct an assessment of the governance of the Manufacturing Extension Partnership (MEP) program. In carrying out the assessment, the Director is instructed to use criteria established pursuant to the Malcolm Baldrige National Quality Award. This novel approach is intended to require the director of NIST to use criteria generally applied in making assessments of private sector proposals on NIST's own programs. It is hoped that this critical assessment will lead to better management of the MEP program.

Future areas of focus— 
The Committee on Science and Technology continues to look at ways of making the Federal scientific agencies more efficient and better managed. One area of future focus is the management of the Department of Energy's (DOE) civilian research laboratories. DOE's laboratories are currently regulated internally, and, to a large degree, to a single DOE set of standards. However, the safety, environmental, and security requirements of DOE's civilian and military laboratories vary greatly. The Committee has begun to investigate whether turning DOE's civilian laboratories over to non-DOE regulation would prove more cost effective than its current internal management structure. The Committee has also been looking at recommendations from a 2009 report by the National Academy of Public Administration to determine if DOE could implement practices aimed at better management of its human capital.

I hope these examples of the Committee's legislative work prove helpful to the Congress at large. As the Congress moves forward with future efforts toward deficit reduction and enhanced management of the Federal Government, the Committee on Science and Technology will continue to be an enthusiastic partner in these endeavors.
HISTORY OF APPOINTMENTS
COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
FOR THE ONE HUNDRED ELEVENTH CONGRESS

January 6, 2009—H. Res. 8
Bart Gordon, Tennessee, was named Chairman of the Committee on Science and Technology.

January 6, 2009—H. Res. 12
Ralph Hall, Texas, was named as Ranking Member of the Committee on Science and Technology.

January 9, 2009—H. Res. 38
Republican Members assigned to the Committee on Science and Technology:
Mr. Hall of Texas, Mr. Sensenbrenner, Mr. Smith of Texas, Mr. Rohrabacher, Mr. Bartlett, Mr. Ehlers, Mr. Lucas, Mrs. Biggert, Mr. Akin, Mr. Neugebauer, Mr. Inglis of South Carolina, Mr. McCaul of Texas, Mr. Mario Diaz-Balart of Florida, Mr. Bilbray, Mr. Smith of Nebraska, Mr. Broun of Georgia, and Mr. Olson.

January 21, 2009—H. Res. 74
Democratic Members assigned to the Committee on Science and Technology:
Mr. Gordon, Mr. Costello, Ms. Johnson of Texas, Ms. Woolsey, Mr. Wu, Mr. Baird, Mr. Miller of North Carolina, Mr. Lipinski, Ms. Giffords, Ms. Edwards of Maryland, Ms. Fudge, Mr. Luján, Mr. Tonko, Mr. Griffith, Mr. Rothman of New Jersey, Mr. Matheson, Mr. Davis of Tennessee, Mr. Chandler, Mr. Carnahan, Mr. Hill, Mr. Mitchell, Mr. Wilson of Ohio, Mrs. Dahlkemper, Mr. Grayson, Ms. Kosmas, and Mr. Peters.

January 22, 2009—H. Res. 78
Mr. Smith of Nebraska (to rank immediately after Mr. Bilbray) was appointed to the Committee on Science and Technology.

November 19, 2009—H. Res. 921
Mr. Garamendi (to rank immediately after Mr. Griffith) was appointed to the Committee on Science and Technology.

December 20, 2009
Mr. Griffith resigned from the Committee on Science and Technology.

May 6, 2010—H. Res. 1334
Mr. Garamendi to rank immediately after Mr. Peters.
RULES GOVERNING PROCEDURE OF
COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
FOR THE ONE HUNDRED ELEVENTH CONGRESS

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RULE 1. GENERAL PROVISIONS

(a) IN GENERAL.—The Rules of the House of Representatives, as applicable, shall govern the Committee and its Subcommittees, except that a motion to recess from day to day and a motion to dispense with the first reading (in full) of a bill or resolution, if printed copies are available, are privileged motions in the Committee and its Subcommittees and shall be decided without debate. [House Rule XI 1(a)]

(b) SUBCOMMITTEES.—The rules of the Committee, as applicable, shall be the rules of its Subcommittees. [House Rule XI 1(a)]

(c) VICE CHAIR.—A Member of the majority party on the Committee or Subcommittee shall be designated by the Chair of the Committee as the Vice Chair of the Committee or Subcommittee, as the case maybe, and shall preside during the absence of the Chair from any meeting. If the Chair and Vice Chair of the Committee or Subcommittee are not present at any meeting of the Committee or Subcommittee, the Ranking Majority Member who is present shall preside at that meeting. [House Rule XI 2(d)]

(d) ORDER OF BUSINESS.—The order of business and procedure of the Committee and the subjects of inquiries or investigations will be decided by the Chair, subject always to an appeal to the Committee.

(e) USE OF HEARING ROOMS.—In consultation with the Ranking Minority Member, the Chair of the Committee shall establish guidelines for the use of Committee hearing rooms.

(f) NATIONAL SECURITY INFORMATION.—All national security information bearing a classification of secret or higher which has been received by the Committee or a Subcommittee shall be deemed to have been received in Executive Session and shall be given appropriate safekeeping. The Chair of the Committee may
establish such regulations and procedures as in the Chair’s judgment are necessary
to safeguard classified information under the control of the Committee. Such proce-
dures shall, however, ensure access to this information by any Member of the Com-
mittee or any other Member of the House of Representatives who has requested the
opportunity to review such material.

(g) AVAILABILITY OF PUBLICATIONS.—To the maximum extent feasible, the
Committee shall make its publications available in electronic form, including on the
Committee website. [House Rule XI 2(e)(4)]

(h) COMMITTEE WEBSITE.—The Chair of the Committee shall maintain an offi-
cial Committee website for the purpose of furthering the Committee’s legislative and
oversight responsibilities, including communicating information about the Commit-
tee’s activities to Committee Members and other Members of the House. The Rank-
ing Minority Member of the Committee may maintain a similar website for the
same purpose, including communicating information about the activities of the mi-
nority to Committee Members and other Members of the House.

(i) MOTION TO GO TO CONFERENCE.—The Chair is directed to offer a motion
under clause 1 of Rule XXII of the Rules of the House whenever the Chair considers
it appropriate. [House Rule XI 2(a)(3)]

(j) CONFERENCE COMMITTEES.—Recommendations of conferees to the Speak-
er shall provide a ratio of majority party Members to minority party Members which
shall be no less favorable to the majority party than the ratio of the Committee.

(k) OTHER PROCEDURES.—The Chair of the Committee, after consultation with
the Ranking Minority Member of the Committee, may establish such other proce-
dures and take such actions as may be necessary to carry out these rules or to facili-
tate the effective operation of the Committee.

Rule 2. REGULAR, ADDITIONAL, AND SPECIAL MEETINGS

(a) REGULAR MEETINGS.—Unless dispensed with by the Chair of the Com-
mittee, the meetings of the Committee shall be held on the second (2nd) and fourth
(4th) Wednesdays of each month the House is in session at 10:00 a.m. [House Rule
XI 2(b)]

(b) ADDITIONAL MEETINGS.—The Chair of the Committee may call and con-
vene, as the Chair considers necessary, additional meetings of the Committee for
the consideration of any bill or resolution pending before the Committee or for the
conduct of other Committee business. The Committee shall meet for such purpose
under that call of the Chair. [House Rule XI 2(c)(1)]

(c) SPECIAL MEETINGS.—Rule XI 2(c) of the Rules of the House of Representa-
tives is hereby incorporated by reference. [House Rule XI 2(c)(2)]

Rule 3. MEETINGS AND HEARINGS GENERALLY

(a) OPENING STATEMENTS.—Insofar as is practicable, the Chair, after con-
sultation with the Ranking Minority Member, shall limit the total time of opening
statements by Members to no more than 10 minutes, the time to be divided equally
between the Chair and Ranking Minority Member.

(b) ADDRESSING THE COMMITTEE.—The time any one (1) Member may ad-
dress the Committee on any bill, motion, or other matter under consideration by the
Committee or the time allowed for the questioning of a witness at hearings before
the Committee will be limited to five (5) minutes, and then only when the Member
has been recognized by the Chair, except that this time limit may be waived by the
Chair. [House Rule XI 2(j)(2)]

(c) REQUESTS FOR WRITTEN MOTIONS.—Any motion made at a meeting of
the Committee and which is entertained by the Chair of the Committee or the Sub-
committee shall be presented in writing upon the demand of any Member present
and a copy made available to each Member present.

(d) OPEN MEETINGS AND HEARINGS.—Each meeting for the transaction of
business, including the markup of legislation, and each hearing of the Committee
or a Subcommittee shall be open to the public, including to radio, television, and
still photography, unless closed in accordance with clause 2(g) of Rule XI of the
Rules of the House of Representatives. [House Rule XI 2(g)]

(e) AUDIO AND VISUAL COVERAGE.

(1) Whenever a hearing or meeting conducted by the Committee is open to the
public, these proceedings shall be open to coverage by audio and visual means,
except as provided in Rule XI 4(f)(2) of the House of Representatives. The Chair
of the Committee or Subcommittee may not limit the number of television, or
still cameras to fewer than two (2) representatives from each medium (except for legitimate space or safety considerations, in which case pool coverage shall be authorized).

(2) Radio and television tapes, television films, and Internet recordings of any Committee hearings or meetings that are open to the public may not be used, or made available for use, as partisan political campaign material to promote or oppose the candidacy of any person for elective public office.

(3) It is, further, the intent of this rule that the general conduct of each meeting or hearing covered under authority of this rule by audio or visual means, and the personal behavior of the Committee Members and staff, other government officials and personnel, witnesses, television, radio, and press media personnel, and the general public at the meeting or hearing, shall be in strict conformity with and observance of the acceptable standards of dignity, propriety, courtesy, and decorum traditionally observed by the House in its operations, and may not be such as to:

(A) distort the objects and purposes of the meeting or hearing or the activities of Committee Members in connection with that meeting or hearing or in connection with the general work of the Committee or of the House; or

(B) cast discredit or dishonor on the House, the Committee, or a Member, Delegate, or Resident Commissioner or bring the House, the Committee, or a Member, Delegate, or Resident Commissioner into disrepute.

(4) The coverage of Committee meetings and hearings by audio and visual means shall be permitted and conducted only in strict conformity with the purposes, provisions, and requirements of this rule.

(5) The following shall apply to coverage of Committee meetings or hearings by audio or visual means:

(A) If audio or visual coverage of the hearing or meeting is to be presented to the public as live coverage, that coverage shall be conducted and presented without commercial sponsorship.

(B) The allocation among the television media of the positions or the number of television cameras permitted by a Committee or Subcommittee Chair in a hearing or meeting room shall be in accordance with fair and equitable procedures devised by the Executive Committee of the Radio and Television Correspondents’ Galleries.

(C) Television cameras shall be placed so as not to obstruct in any way the space between a witness giving evidence or testimony and any Member of the Committee or the visibility of that witness and that Member to each other.

(D) Television cameras shall operate from fixed positions but may not be placed in positions that obstruct unnecessarily the coverage of the hearing or meeting by the other media.

(E) Equipment necessary for coverage by the television and radio media may not be installed in, or removed from, the hearing or meeting room while the Committee is in session.

(F)(i) Except as provided in subdivision (ii), floodlights, spotlights, strobe lights, and flashguns may not be used in providing any method of coverage of the hearing or meeting.

(ii) The television media may install additional lighting in a hearing or meeting room, without cost to the Government, in order to raise the ambient lighting level in a hearing or meeting room to the lowest level necessary to provide adequate television coverage of a hearing or meeting at the current state-of-the-art of television coverage.

(G) In the allocation of the number of still photographers permitted by a Committee or Subcommittee Chair in a hearing or meeting room, preference shall be given to photographers from Associated Press Photos and United Press International Newspictures. If requests are made by more of the media than will be permitted by a Committee or Subcommittee Chair for coverage of a hearing or meeting by still photography, that coverage shall be permitted on the basis of a fair and equitable pool arrangement devised by the Standing Committee of Press Photographers.

(H) Photographers may not position themselves between the witness table and the Members of the Committee at any time during the course of a hearing or meeting.
(I) Photographers may not place themselves in positions that obstruct unnecessarily the coverage of the hearing by the other media.

(J) Personnel providing coverage by the television and radio media shall be currently accredited to the Radio and Television Correspondents' Galleries.

(K) Personnel providing coverage by still photography shall be currently accredited to the Press Photographers' Gallery.

(L) Personnel providing coverage by the television and radio media and by still photography shall conduct themselves and their coverage activities in an orderly and unobtrusive manner. [House Rule XI (4)]

Rule 4. CONSIDERATION OF MEASURE OR MATTER

(a) IN GENERAL.—Bills and other substantive matters may be taken up for consideration only when called by the Chair of the Committee or by a majority vote of a quorum of the Committee, except those matters which are the subject of special call meetings outlined in Rule 2(c).

(b) NOTICE.—

(1) It shall not be in order for the Committee to consider any new or original measure or matter unless written notice of the date, place and subject matter of consideration and, to the maximum extent practicable, a written copy of the measure or matter to be considered and, to the maximum extent practicable, the original text of the measure to be considered for purposes of markup have been available to each Member of the Committee for at least 48 hours in advance of consideration, excluding Saturdays, Sundays and legal holidays.

(2) Notwithstanding paragraph (1), consideration of any legislative measure or matter by the Committee shall be in order by vote of two-thirds of the Members present, provided that a majority of the Committee is present.

(c) SUBMISSION OF AMENDMENTS.—To the maximum extent practicable, amendments to a measure or matter shall be submitted in writing to the Clerk of the Committee at least 24 hours prior to the consideration of the measure or matter.

(d) SUSPENDED PROCEEDINGS.—During the consideration of any measure or matter, the Chair of the Committee, or of any Subcommittee, may recess the Committee or Subcommittee, as the case may be, at any point. Additionally, during the consideration of any measure or matter, the Chair of the Committee, or of any Subcommittee, shall suspend further proceedings after a question has been put to the Committee or Subcommittee at anytime when there is a vote by electronic device occurring in the House of Representatives. Suspension of proceedings after a record vote is ordered on the question of approving a measure or matter or on adopting an amendment shall be conducted in compliance with the provisions of Rule 6(d).

(e) INVESTIGATIVE OR OVERSIGHT REPORTS.—A proposed investigative or oversight report shall be considered as read in Committee if it has been available to the Members for at least 24 hours (excluding Saturdays, Sundays, or legal holidays except when the House is in session on such a day). [House Rule XI 1(b)(2)]

(f) GERMANENESS.—The rules of germaneness shall be enforced by the Chair of the Committee or Subcommittee, as the case may be.

Rule 5. POWER TO SIT AND ACT; SUBPOENA POWER

(a) IN GENERAL.—

(1) Notwithstanding paragraph (2), a subpoena may be authorized and issued in the conduct of any investigation or series of investigations or activities to require the attendance and testimony of such witnesses and the production of such books, records, correspondence, memoranda, papers and documents as deemed necessary, only when authorized by majority vote of the Committee or Subcommittee (as the case may be), a majority of the Committee or Subcommittee being present. Authorized subpoenas shall be signed only by the Chair of the Committee, or by any Member designated by the Chair. [House Rule XI 2(3)(A)]

(2) The Chair of the Committee, after consultation with the Ranking Minority Member of the Committee, or, if the Ranking Member cannot be reached, the Ranking Minority Member of the relevant Subcommittee, may authorize and issue such subpoenas as described in paragraph (1) during any period in which the House has adjourned for a period longer than seven (7) days. [House Rule XI 2(3)(A)]
(3) A subpoena duces tecum may specify terms of return other than at a meet-
ing or a hearing of the Committee. [House Rule XI 2(m)(3)(B)]

(b) SENSITIVE OR CONFIDENTIAL INFORMATION.—Unless otherwise deter-
dined by the Committee or Subcommittee, certain information received by the Com-
mittee or Subcommittee pursuant to a subpoena not made part of the record at an
open hearing shall be deemed to have been received in Executive Session when the
Chair of the Committee, in the Chair’s judgment and after consultation with the
Ranking Minority Member of the Committee, deems that in view of all of the cir-
cumstances, such as the sensitivity of the information or the confidential nature of
the information, such action is appropriate.

Rule 6. QUORUMS AND VOTING

(a) QUORUMS.—
(1) One-third (1/3) of the Members of the Committee shall constitute a quorum
for all purposes except as provided in paragraphs (2) and (3) of this Rule.
[House Rule XI 2(h)(3)]

(2) A majority of the Members of the Committee shall constitute a quorum in
order to: (A) report any legislation, measure, or matter; (B) close Committee
meetings or hearings pursuant to Rule 3(d); and (C) authorize the issuance of
subpoenas pursuant to Rule 5(a). [House Rule XI 2(h)(1); House Rule XI 2(g);
House Rule XI 2(m)(3)(A)]

(3) Two (2) Members of the Committee shall constitute a quorum for taking tes-
timony and receiving evidence, which, unless waived by the Chair of the Com-
mittee after consultation with the Ranking Minority Member of the Committee,
shall include at least one (1) Member from each of the majority and minority
parties. [House Rule XI 2(h)(2)]

(b) VOTING BY PROXY.—No Member may authorize a vote by proxy with respect
to any measure or matter before the Committee. [House Rule XI 2(f)]

(c) REQUESTS FOR RECORD VOTE AT COMMITTEE.—A record vote of the
Members may be had at the request of three (3) or more Members or, in the appar-
ent absence of a quorum, by any one (1) Member.

(d) POSTPONEMENT OF PROCEEDINGS.—The Chair of the Committee, or of
any Subcommittee, is authorized to postpone further proceedings when a record vote
is ordered on the question of approving a measure or matter or on adopting an
amendment, and to resume proceedings on a postponed question at any time after
reasonable notice. Upon resuming proceedings on a postponed question, notwith-
standing any intervening order for the previous question, an underlying proposition
shall remain subject to further debate or amendment to the same extent as when
the question was postponed. [House Rule XI 2(h)(4)]

Rule 7. HEARING PROCEDURES

(a) ANNOUNCEMENT OF HEARING.—The Chair shall make a public announce-
ment of the date, time, place, and subject matter of a hearing, and to the extent
practicable, a list of witnesses at least one (1) week before the commencement of
the hearing. If the Chair, with the concurrence of the Ranking Minority Member,
determines there is good cause to begin the hearing sooner, or if the Committee so
determines by majority vote, a quorum being present for the transaction of business,
the Chair shall make the announcement at the earliest possible date. Any an-
nouncement made under this Rule shall be promptly published in the Daily Digest,
and promptly made available in electronic form, including on the Committee
website. [House Rule XI 2(g)(3)]

(b) WITNESS STATEMENT; TESTIMONY.—
(1) Insofar as is practicable, no later than 48 hours in advance of his or her
appearance, each witness who is to appear before the Committee shall file in
printed copy and in electronic form a written statement of his or her proposed
testimony and a curriculum vitae. [House Rule XI 2(g)(4)]

(2) To the greatest extent practicable, each witness appearing before the Com-
mittee shall include with the written statement of proposed testimony a disclo-
sure of any financial interests which are relevant to the subject of his or her
testimony. These include, but are not limited to, public and private research
grants, stock or stock options held in publicly traded and privately owned com-
panies, government contracts with the witness or the witness’ employer, and
any form of payment of compensation from any relevant entity. The source and
amount of the financial interest should be included in this disclosure. [House Rule XI 2(g)(4)]

(3) Each witness shall limit his or her presentation to a five (5) minute summary, provided that additional time may be granted by the Chair of the Committee or Subcommittee when appropriate.

c) MINORITY WITNESSES.—Whenever any hearing is conducted by the Committee on any measure or matter, the minority Members of the Committee shall be entitled, upon request to the Chair by a majority of them before the completion of the hearing, to call witnesses selected by the minority to testify with respect to the measure or matter during at least one (1) day of hearing thereon. [House Rule XI 2(j)(1)]

d) EXTENDED QUESTIONING OF WITNESSES BY MEMBERS.—Notwithstanding Rule 3(b), upon a motion, the Chair, in consultation with the Ranking Minority Member, may designate an equal number of Members from each party to question the witnesses for period of time equally divided between the majority party and the minority party, not to exceed one (1) hour in the aggregate or, upon a motion, may designate staff from each party to question a witness for equal specific periods that do not exceed one (1) hour in the aggregate. [House Rule XI 2(j)(2)]

e) ADDITIONAL QUESTIONS FOR THE RECORD.—Members of the Committee have two (2) weeks from the date of a hearing to submit additional questions for the record to be answered by witnesses who have appeared in person. The letters of transmittal and any responses thereto shall be printed in the hearing record.

(f) ADDITIONAL HEARING PROCEDURES.—Rule XI 2(k) of the Rules of the House of Representatives is hereby incorporated by reference. [House Rule XI 2(k)]

Rule 8. PROCEDURES FOR REPORTING MEASURES OR MATTERS

(a) FILING OF REPORTS.—

(1) It shall be the duty of the Chair of the Committee to report or cause to be reported promptly to the House any measure approved by the Committee and to take or cause to be taken the necessary steps to bring the matter to a vote. To the maximum extent practicable, the written report of the Committee on such measures shall be made available to the Committee membership for review at least 24 hours in advance of filing. [House Rule XIII 2(b)(1)]

(2) The report of the Committee on a measure which has been approved by the Committee shall be filed within seven (7) calendar days (exclusive of days on which the House is not in session) after the day on which there has been filed with the Clerk of the Committee a written request, signed by the majority of the Members of the Committee, for the reporting of that measure. Upon the filing of any such request, the Clerk of the Committee shall transmit immediately to the Chair of the Committee notice of the filing of that request. [House Rule XIII 2(b)(2)]

(b) SUPPLEMENTAL, MINORITY, OR ADDITIONAL VIEWS.—If, at the time of approval of any measure or matter by the Committee, any Member of the Committee gives notice of intention to file supplemental, minority, or additional views, that Member shall have two (2) subsequent calendar days after the day of such notice (excluding Saturdays, Sundays, and legal holidays) in which to file such views, in writing and signed by that Member, with the Clerk of the Committee. No supplemental, minority, or additional views shall be accepted for inclusion in the report if submitted after two (2) subsequent calendar days have elapsed unless the Chair of the Committee or Subcommittee, as appropriate, decides to extend the time for submission of views, in which case the Chair shall communicate such fact, including the revised day and hour for submissions to be received, to the Members of the Committee without delay. All such views so filed by one (1) or more Members of the Committee shall be included within, and shall be a part of, the report filed by the Committee with respect to that measure or matter. [House Rule XI 2(1)]

(c) CONTENTS OF REPORT.—

(1) The report of the Committee on a measure or matter shall be printed in a single volume that shall—

(A) include all supplemental, minority, or additional views that have been submitted by the time of the filing of the report on that measure or matter; and

(B) bear on its cover a recital that any such supplemental, minority, or additional views (and any material submitted under Rule 8(c)(3)(A)) are included as part of the report.
(2) The report of the Committee on a measure which has been approved by the Committee shall include the following, to be provided by the Committee:

(A) the oversight findings and recommendations required pursuant to Rule X 2(b)(1) of the Rules of the House of Representatives, separately set out and identified; [House Rule XIII 3(c)(1)]

(B) the statement required by section 308(a) of the Congressional Budget Act of 1974, separately set out and identified, if the measure provides new budget authority or new or increased tax expenditures as specified in Rule XIII 3(c)(2); [House Rule XIII 3(c)(2)]

(C) with respect to reports on a bill or joint resolution of a public character, a "Constitutional Authority Statement" citing the specific powers granted to Congress by the Constitution pursuant to which the bill or joint resolution is proposed to be enacted; [House Rule XIII 3(d)(1)]

(D) with respect to each recorded vote on a motion to report any measure or matter of a public character, and on any amendment offered to the measure or matter, the total number of votes cast for and against, and the names of those Members voting for and against, shall be included in the Committee report on the measure or matter;

(E) the estimate and comparison prepared by the Committee under Rule XIII, clause 3(d)(2) of the Rules of the House of Representatives, unless the estimate and comparison prepared by the Director of the Congressional Budget Office prepared under subparagraph 3 of this Rule has been timely submitted prior to the filing of the report and included in the report; [House Rule XIII 3(d)(2)]

(F) in the case of a bill or joint resolution which repeals or amends any statute or part thereof, the text of the statute or part thereof which is proposed to be repealed, and a comparative print of that part of the bill or joint resolution making the amendment and of the statute or part thereof proposed to be amended; [House Rule XIII 3(e)]

(G) a transcript of the markup of the measure or matter unless waived under Rule 12(a); and

(H) a statement of general performance goals and objectives, including outcome-related goals and objectives, for which the measure authorizes funding. [House Rule XIII 3(e)(4)]

(3) The report of the Committee on a measure which has been approved by the Committee shall further include the following, to be provided by sources other than the Committee:

(A) the estimate and comparison prepared by the Director of the Congressional Budget Office required under section 403 of the Congressional Budget Act of 1974, separately set out and identified, whenever the Director (if timely, and submitted prior to the filing of the report) has submitted such estimate and comparison of the Committee; [House Rule XIII 3(c)(3)]

(B) if the Committee has not received prior to the filing of the report the material required under subparagraph (A) of this Rule, then it shall include a statement to that effect in the report on the measure.

(d) IMMEDIATE PRINTING; SUPPLEMENTAL REPORTS.—This Rule does not preclude—

(1) the immediate filing or printing of a Committee report unless a timely request for the opportunity to file supplemental, minority, or additional views has been made as provided by this Rule; or

(2) the filing by the Committee of any supplemental report upon any measure or matter which may be required for the correction of any technical error in a previous report made by that Committee upon that measure or matter.

(e) PRIVATE BILLS.—No private bill will be reported by the Committee if there are two (2) or more dissenting votes. Private bills so rejected by the Committee will not be reconsidered during the same Congress unless new evidence sufficient to justify a new hearing has been presented to the Committee.

(f) REPORT LANGUAGE ON USE OF FEDERAL RESOURCES.—No legislative report filed by the Committee on any measure or matter reported by the Committee shall contain language which has the effect of specifying the use of federal resources more explicitly (inclusively or exclusively) than that specified in the measure or matter as ordered reported, unless such language has been approved by the Committee during a meeting or otherwise in writing by a majority of the Members.
Rule 9. OTHER COMMITTEE PUBLICATIONS

(a) HOUSE REPORTS.—Any document published by the Committee as a House Report, other than a report of the Committee on a measure which has been approved by the Committee, shall be approved by the Committee at a meeting, and Members shall have the same opportunity to submit views as provided for in Rule 8(b).

(b) OTHER DOCUMENTS.—

(1) Subject to paragraph (2) and (3), the Chair of the Committee may approve the publication of any document as a Committee print which in the Chair’s discretion the Chair determines to be useful for the information of the Committee.

(2) Any document to be published as a Committee print which purports to express the views, findings, conclusions, or recommendations of the Committee or any of its Subcommittees, other than a report of the Committee on a measure which has been approved by the Committee, must be approved by the Committee or its Subcommittees, as applicable, in a meeting or otherwise in writing by a majority of the Members, and such Members shall have the right to submit supplemental, minority, or additional views for inclusion in the print within at least 48 hours after such approval.

(3) Any document to be published as a Committee print, other than a document described in subsection (2) of this Rule, shall—

(A) include on its cover the following statement: “This document has been printed for informational purposes only and does not represent either findings or recommendations adopted by this Committee”; and

(B) not be published following the sine die adjournment of a Congress, unless approved by the Chair of the Committee after consultation with the Ranking Minority Member of the Committee.

(c) JOINT INVESTIGATION OR STUDY.—A report of an investigation or study conducted jointly by the Committee and one (1) or more other Committee(s) may be filed jointly, provided that each of the Committees complies independently with all requirements for approval and filing of the report. [House Rule XI 1(b)(2)]

(d) POST ADJOURNMENT FILING OF COMMITTEE REPORTS.—

(1) After an adjournment of the last regular session of a Congress sine die, an investigative or oversight report approved by the Committee may be filed with the Clerk at any time, provided that if a Member gives notice at the time of approval of intention to file supplemental, minority, or additional views, that Member shall be entitled to not less than seven (7) calendar days in which to submit such views for inclusion with the report. [House Rule XI 1(b)(4)]

(2) After an adjournment sine die of the last regular session of a Congress, the Chair of the Committee may file the Committee’s Activity Report for that Congress under clause 1(d)(1) of Rule XI of the Rules of the House with the Clerk of the House at anytime and without the approval of the Committee, provided that a copy of the report has been available to each Member of the Committee for at least seven (7) calendar days and that the report includes any supplemental, minority, or additional views submitted by a Member of the Committee. [House Rule XI 1(d)(1)]

Rule 10. GENERAL OVERSIGHT AND INVESTIGATIVE RESPONSIBILITIES

(a) OVERSIGHT.—

(1) IN GENERAL.—The Committee shall review and study on a continuing basis laws, programs, and Government activities relating to nonmilitary research and development. [House Rule X 3(k)]

(2) OVERSIGHT PLAN.—Not later than February 15 of the first session of a Congress, the Committee shall meet in open session, with a quorum present, to adopt its oversight plans for that Congress for submission to the Committee on Oversight and Government Reform and the Committee on House Administration, in accordance with the provisions of clause 2(d) of Rule X of the House of Representatives. [House Rule X 2(d)].

(b) INVESTIGATIONS.—

(1) IN GENERAL.—The Chair of the Committee may undertake any formal investigation in the name of the Committee after consultation with the Ranking Minority Member of the Committee.
(2) SUBCOMMITTEE INVESTIGATIONS.—The Chair of any Subcommittee shall not undertake any formal investigation in the name of the Committee or Subcommittee without formal approval by the Chair of the Committee, in consultation with other appropriate Subcommittee Chairs, and after consultation with the Ranking Minority Member of the Committee. The Chair of any Subcommittee shall also consult with the Ranking Minority Member of the Subcommittee before undertaking any investigation in the name of the Committee.

Rule 11. SUBCOMMITTEES

(a) ESTABLISHMENT AND JURISDICTION OF SUBCOMMITTEES.—The Committee shall have the following standing Subcommittees with the jurisdiction indicated.

(1) SUBCOMMITTEE ON ENERGY AND ENVIRONMENT.—Legislative jurisdiction and general oversight and investigative authority on all matters relating to energy research, development, and demonstration and projects therefor, commercial application of energy technology, and environmental research, including:

(A) Department of Energy research, development, and demonstration programs;
(B) Department of Energy laboratories;
(C) Department of Energy science activities;
(D) energy supply activities;
(E) nuclear, solar and renewable energy, and other advanced energy technologies;
(F) uranium supply and enrichment, and Department of Energy waste management and environment, safety, and health activities, as appropriate;
(G) fossil energy research and development;
(H) clean coal technology;
(I) energy conservation research and development;
(J) energy aspects of climate change;
(K) pipeline research, development, and demonstration projects;
(L) energy and environmental standards;
(M) energy conservation, including building performance, alternate fuels for and improved efficiency of vehicles, distributed power systems, and industrial process improvements;
(N) Environmental Protection Agency research and development programs;
(O) the National Oceanic and Atmospheric Administration, including all activities related to weather, weather services, climate, the atmosphere, marine fisheries, and oceanic research;
(P) risk assessment activities; and
(Q) scientific issues related to environmental policy, including climate change.

(2) SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION.—Legislative jurisdiction and general oversight and investigative authority on all matters relating to competitiveness, technology, standards, and innovation, including:

(A) standardization of weights and measures, including technical standards, standardization, and conformity assessment;
(B) measurement, including the metric system of measurement;
(C) the Technology Administration of the Department of Commerce;
(D) the National Institute of Standards and Technology;
(E) the National Technical Information Service;
(F) competitiveness, including small business competitiveness;
(G) tax, antitrust, regulatory and other legal and governmental policies as they relate to technological development and commercialization;
(H) technology transfer, including civilian use of defense technologies;
(I) patent and intellectual property policy;
(J) international technology trade;
(K) research, development, and demonstration activities of the Department of Transportation;
(L) surface and water transportation research, development, and demonstration programs;
(M) earthquake programs (except for NSF) and fire research programs, including those related to wildfire proliferation research and prevention;
(N) biotechnology policy;
(O) research, development, demonstration, and standards-related activities of the Department of Homeland Security;
(P) Small Business Innovation Research and Technology Transfer; and
(Q) voting technologies and standards.

(3) SUBCOMMITTEE ON RESEARCH AND SCIENCE EDUCATION.—Legislative jurisdiction and general oversight and investigative authority on all matters relating to science policy and science education, including:
   (A) the Office of Science and Technology Policy;
   (B) all scientific research, and scientific and engineering resources (including human resources), math, science and engineering education;
   (C) intergovernmental mechanisms for research, development, and demonstration and cross-cutting programs;
   (D) international scientific cooperation;
   (E) National Science Foundation, including earthquake programs;
   (F) university research policy, including infrastructure and overhead;
   (G) university research partnerships, including those with industry;
   (H) science scholarships;
   (I) computing, communications, and information technology;
   (J) research and development relating to health, biomedical, and nutritional programs;
   (K) to the extent appropriate, agricultural, geological, biological and life sciences research; and
   (L) materials research, development, and demonstration and policy.

(4) SUBCOMMITTEE ON SPACE AND AERONAUTICS.—Legislative jurisdiction and general oversight and investigative authority on all matters relating to astronomical and aeronautical research and development, including:
   (A) national space policy, including access to space;
   (B) sub-orbital access and applications;
   (C) National Aeronautics and Space Administration and its contractor and government-operated labs;
   (D) space commercialization, including commercial space activities relating to the Department of Transportation and the Department of Commerce;
   (E) exploration and use of outer space;
   (F) international space cooperation;
   (G) the National Space Council;
   (H) space applications, space communications and related matters;
   (I) Earth remote sensing policy;
   (J) civil aviation research, development, and demonstration;
   (K) research, development; and demonstration programs of the Federal Aviation Administration; and
   (L) space law.

(5) SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT.—General and special investigative authority on all matters within the jurisdiction of the Committee on Science and Technology.

(b) RATIOS.—A majority of the Majority Members of the Committee shall determine an appropriate ratio of Majority to Minority Members of each Subcommittee and shall authorize the Chair of the Committee to negotiate that ratio with the minority party; Provided, however, that the ratio of majority Members to minority Members on each Subcommittee (including any ex-officio Members) shall be no less favorable to the majority party than the ratio for the Committee.

(c) EX-OFFICIO MEMBERS.—The Chair of the Committee and Ranking Minority Member of the Committee shall serve as ex-officio Members of all Subcommittees
and shall have the right to vote and be counted as part of the quorum and ratios on all matters before the Subcommittee.

(d) REFERRAL OF LEGISLATION.—The Chair of the Committee shall refer all legislation and other matters referred to the Committee to the Subcommittee or Subcommittees of appropriate primary and secondary jurisdiction within two (2) weeks of the matters being referred to the Committee, unless the Chair of the Committee deems consideration is to be by the Committee. Subcommittee Chairs may make requests for referral of specific matters to their Subcommittee within the two (2) week period if they believe Subcommittee jurisdictions so warrant.

(e) PROCEDURES.—

(1) No Subcommittee shall meet to consider for markup or approval any measure or matter when the Committee or any other Subcommittee of the Committee is meeting to consider any measure or matter for markup or approval.

(2) Each Subcommittee is authorized to meet, hold hearings, receive testimony or evidence, mark up legislation, and report to the Committee all matters referred to it. For matters within its jurisdiction, each Subcommittee is authorized to conduct legislative, investigative, forecasting, and general oversight hearings; to conduct inquiries into the future; and to undertake budget impact studies.

(3) Subcommittee Chairs shall set meeting dates after consultation with the Chair of the Committee and other Subcommittee Chairs with a view toward avoiding simultaneous scheduling of Committee and Subcommittee meetings or hearings wherever possible.

(4) Any Member of the Committee may have the privilege of sitting with any Subcommittee during its hearings or deliberations and may participate in such hearings or deliberations, but no Member who is not a Member of the Subcommittee shall vote on any matter before such Subcommittee, except as provided in subsection (c) of this Rule.

(5) During consideration of any measure or matter for markup or approval in a Subcommittee proceeding, a record vote may be had at the request of one (1) or more Members of that Subcommittee.

(f) CONSIDERATION OF SUBCOMMITTEE REPORTS.—After ordering a measure or matter reported, a Subcommittee shall issue a Subcommittee report in such form as the Chair of the Committee shall specify. Reports and recommendations of a Subcommittee shall not be considered by the Committee until after the intervention of 48 hours, excluding Saturdays, Sundays and legal holidays, from the time the report is submitted and made available to the Members of the Committee and printed hearings thereon shall be made available, if feasible, to the Members of the Committee, except that this Rule may be waived at the discretion of the Chair of the Committee after consultation with the Ranking Minority Member of the Committee.

Rule 12. COMMITTEE RECORDS

(a) TRANSCRIPTS.—The transcripts of those hearings conducted by the Committee and Subcommittees shall be published as a substantially verbatim account of remarks actually made during the proceedings, subject only to technical, grammatical, and typographical corrections authorized by the person making the remarks involved. Transcripts of markups shall be recorded and published in the same manner as hearings before the Committee and shall be included as part of the legislative report unless waived by the Chair of the Committee. [House Rule XI 2(e)(1)(A)]

(b) KEEPING OF RECORDS.—The Committee shall keep a complete record of all Committee action, which shall include a record of the votes on any question on which a record vote is demanded. The result of each record vote shall be made available by the Committee for inspection by the public at reasonable times in the offices of the Committee. Information so available for public inspection shall include a description of the amendment, motion, order, or other proposition and the name of each Member voting for and each Member voting against such amendment, motion, order, or proposition, and the names of those Members present but not voting. [House Rule XI 2(e)(11)]

(c) AVAILABILITY OF ARCHIVED RECORDS.—The records of the Committee at the National Archives and Records Administration shall be made available for public use in accordance with Rule VII of the Rules of the House of Representatives. The Chair of the Committee shall notify the Ranking Minority Member of the Committee of any decision, pursuant to Rule VII 3(b)(3) or clause 4(b) of the Rules of the House of Representatives, to withhold a record otherwise available, and the
matter shall be presented to the Committee for a determination on the written request of any Member of the Committee. [House Rule XI 2(e)(3)]

(d) PROPERTY OF HOUSE.—

(1) Except as provided for in paragraph (2), all Committee hearings, records, data, charts, and files shall be kept separate and distinct from the congressional office records of the Member serving as its Chair. Such records shall be the property of the House, and each Member, Delegate, and the Resident Commissioner, shall have access thereto.

(2) A Member, Delegate, or Resident Commissioner, other than Members of the Committee on Standards of Official Conduct, may not have access to the records of the Committee respecting the conduct of a Member, Delegate, Resident Commissioner, officer, or employee of the House without the specific prior permission of the Committee. [House Rule XI 2(e)(2)]
LEGISLATIVE AND OVERSIGHT JURISDICTION OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY

“Rule X. Organization of Committees.
Committees and their legislative jurisdictions.

1. There shall be in the House the following standing Committees, each of which shall have the jurisdiction and related functions assigned to it by this clause and clauses 2, 3, and 4. All bills, resolutions, and other matters relating to subjects within the jurisdiction of the standing Committees listed in this clause shall be referred to those Committees, in accordance with clause 2 of rule XII, as follows:

* * * * * * *

“o) Committee on Science and Technology.

(1) All energy research, development, and demonstration, and projects therefor, and all federally owned or operated non-military energy laboratories.

(2) Astronautical research and development, including resources, personnel, equipment, and facilities.

(3) Civil aviation research and development.

(4) Environmental research and development.

(5) Marine research.

(6) Commercial application of energy technology.

(7) National Institute of Standards and Technology, standardization of weights and measures and the metric system.

(8) National Aeronautics and Space Administration.

(9) National Space Council.

(10) National Science Foundation.

(11) National Weather Service.

(12) Outer space, including exploration and control thereof.

(13) Science Scholarships.

(14) Scientific research, development, and demonstration, and projects therefor.

* * * * * * *

“SPECIAL OVERSIGHT FUNCTIONS

“3.(k) The Committee on Science and Technology shall review and study on a continuing basis laws, programs, and Government activities relating to non-military research and development.”
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