Testimony of
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U.S. Department of Energy

Before the
Committee on Energy and Natural Resources
United States Senate

Regarding the
FY 2008 Budget Request

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Chairman Bingaman, Ranking Member Domenici, and members of the Committee, I am pleased to be with you this morning to present the President's FY 2008 budget proposal for the Department of Energy.

Before I discuss the details of our budget proposal, I would like to briefly mention the President's energy initiatives announced during the State of the Union. As you know, President Bush asked Congress and America's scientists, farmers, industry leaders and entrepreneurs to join him in pursuing the goal of reducing U.S. gasoline usage by 20 percent in the next ten years. We have named this our **"Twenty in Ten"** plan and I urge your support for this ambitious plan. For too long, our nation has been dependent on oil. America's dependence leaves us more vulnerable to hostile regimes, and to terrorists who could cause huge disruptions of oil shipments, raise the price of oil, and do great harm to our economy.

America will reach the President's "Twenty in Ten" goal by increasing the supply of renewable and alternative fuels by setting a mandatory fuels standard to require 35 billion gallons of renewable and alternative fuels in 2017; nearly five times the 2012 target now in law. In 2017, this will displace 15 percent of projected annual gasoline use. We have also proposed to reform and modernize Corporate Average Fuel Economy (CAFE) standards for cars and extending the current light truck rule. In 2017, this will reduce projected annual gasoline use by up to 8.5 billion gallons, a further 5 percent reduction that, in combination with increasing the supply of renewable and alternative fuels, will bring the total reduction in projected annual gasoline use to 20 percent.

This plan will also strengthen America's energy security by stepping up domestic oil production in environmentally sensitive ways, and by doubling the current capacity of the Strategic Petroleum Reserve (SPR) to 1.5 billion barrels by 2027.

Coupled with the **Advanced Energy Initiative (AEI)** and the **American Competitiveness Initiative (ACI)**, which were launched a year ago, these proposals offer a strong plan to strengthen America's energy security, and I encourage members of the Committee to join us in pursuing these proposals.

HIGHLIGHTS OF THE FY 2008 DEPARTMENT OF ENERGY BUDGET

The strength and prosperity of America's economy is built on the security of our nation and the reliability of energy sources. Since 2001, the Administration has invested $158 billion through the Department of Energy (DOE) to help drive America's economic growth, provide for our national security, and address the energy challenges that face our nation. The Department of Energy's fiscal year (FY) 2008 budget request of $24.3 billion stays on course to address the growing demand for affordable, clean and reliable energy; preserve our national security; and enable scientific breakthroughs that will have significant impacts on our quality of life and the health of the American people. The FY 2008 budget was developed to meet those goals.

With a total investment of $24.3 billion in FY 2008, the Department will seek to advance the President's American Competitiveness Initiative aimed at ensuring U.S. technological competitiveness and economic security, and implement the Advanced Energy Initiative which seeks to accelerate the research, development and deployment of clean energy technologies to diversify our nation's energy supply. These efforts, combined with investments to meet our commitment to protect the United States as stewards of our nation's nuclear weapons stockpile and to environmental cleanup, will foster continued economic growth and promote a sustainable energy future.

This budget, while focused on delivering results to meet the nation's priorities, also serves as the roadmap for the future of America's energy security. It is a budget poised to support the President's pro-growth economic policies and spending restraints. In addition, the FY 2008 budget request was shaped to reflect the Department's five strategic themes consistent with the President's Management Agenda to improve performance and accountability across the Department of Energy. They are:

- Promoting America's energy security through reliable, clean, and affordable energy;
- Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations;
- Ensuring America's nuclear security;
- Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons; and
- Enabling the Mission through sound management.

To highlight, the FY 2008 budget for the Department of Energy emphasizes investments that will:

- **Advance the American Competitiveness Initiative**
  Last year President Bush launched the American Competitiveness Initiative -- (ACI) -- to encourage innovation throughout the economy and to give America's children a firm grounding in math and science. The FY 2008 budget investment of $4.4 billion from the Department, an increase of approximately $300 million

from the FY 2007 budget request, increases basic research in the physical sciences, builds the large-scale scientific facilities essential for U.S. world leadership, supports thousands of scientists and students – our current and future scientific and technical workforce – and encourages entrepreneurship and technology discovery. Scientific and technological discovery and innovation are the major engines of increasing productivity—indispensable to ensuring growth, job creation, and rising incomes for American families in the technologically driven twenty-first century. The investment is essential if the United States is to maintain its world-class, scientific leadership and global competitiveness.

- **Accelerate the Advanced Energy Initiative**
  At a request of $2.7 billion, $557 million above the FY 2007 budget request of $2.1 billion, the President's Advanced Energy Initiative (AEI) will continue to support clean energy technology breakthroughs that will help improve our energy security through diversification and could help to reduce our dependence on foreign oil. The FY 2008 budget for AEI includes funding for the advancement of renewable energy technologies such as biomass, wind, and solar energy, as well as hydrogen research and development. Also, AEI's diverse energy portfolio includes accelerating the development of clean coal technology, including building a near-zero atmospheric emissions coal plant known as FutureGen. AEI also includes funding for nuclear energy technologies, including the Global Nuclear Energy Partnership, and basic science research that supports developments in many of the aforementioned technologies as well as fusion energy research.

- **Expand the Resurgence of Nuclear Energy**
  Nuclear energy is an important source of energy in the United States and is a key component of the AEI portfolio. Nuclear energy is clean, safe, and reliable, and already supplies about 20 percent of the nation's electricity. Recognizing the potential of nuclear energy, the President announced in February 2006 the Global Nuclear Energy Partnership (GNEP). GNEP seeks to bring about significant, wide-scale use of nuclear energy through the development of better, more efficient and proliferation-resistant nuclear fuel cycles while reducing the volume of nuclear waste requiring ultimate disposal. GNEP will also help reduce the threat of nuclear proliferation around the world. In addition, it helps address the Department's long-term nuclear waste disposal challenges. A total of $405 million ($10 million in Defense Nuclear Nonproliferation) is requested in this budget for GNEP, which is an increase of $155.0 million above the FY 2007 budget request of $250 million.

  We can not forget that expansion of nuclear power is only possible if we continue to develop a responsible path for disposing of spent nuclear fuel. Therefore, $494.5 million is requested in FY 2008 for the continued development of a geologic waste repository at Yucca Mountain, Nevada. Not later than June 30, 2008, the Department intends to complete and submit a License Application to the Nuclear Regulatory Commission for authorization to construct the repository.

GNEP has important implications for the permanent repository at Yucca Mountain. The increased efficiency in recycling spent nuclear fuel would ensure that even with expanded use of nuclear energy, the U.S. would need only one geologic repository. GNEP is consistent with the Yucca Mountain Project and extends its benefits beyond the twenty-first century.

- **Transform Our Nuclear Weapons Complex**
  The FY 2008 budget reconfirms the Department of Energy's steadfast commitment to the national security interests of the United States through stewardship of a reliable and responsive nuclear weapons stockpile and by advancing the goals of global non-proliferation. Through the National Nuclear Security Administration (NNSA), the Department directs $6.5 billion in this request for **Weapons Activities**, a $103 million increase from the FY 2007 request, to meet the existing requirements for stewardship of the Nation's nuclear weapon stockpile, technologies and facilities, as well as to continue to revitalize the nuclear weapons complex with the goal of a much smaller size by 2030. This effort, called "**Complex 2030,**" is structured to achieve President Bush's vision to create a more efficient Nuclear Weapons Complex of the future that is able to respond to changing national and global security challenges.

- **Reduce the Risk of Weapons of Mass Destruction Worldwide**
  The Department has provided $1.7 billion in this request for **Defense Nuclear Nonproliferation**, for a comprehensive set of programs to meet our commitment to detect, prevent, and reverse the proliferation of Weapons of Mass Destruction (WMD) in close cooperation with our partners around the world. This program is an Administration priority and while the funding amount shows a 3 percent decrease, this reflects accelerated completions in FY 2007. Further, the request provides significant out-year growth to fulfill our international agreements and accelerate our work to reduce the risk of WMD threats. Among many advances, the FY 2008 budget for example will further our work in the Megaports program by initiating the installation of radiation detection equipment at the Port of Hong Kong.

- **Meet Our Commitments to Public Health and Safety and the Environment**
  During my first days at the Department of Energy, I announced safety as my top priority and the number one operating principle of the Department. To implement this vision, we created a new **Office of Health, Safety and Security**. As I said at the time, "As Secretary of Energy, ensuring the safety of workers across the DOE complex is my top priority and this new office will go a long way in strengthening our safety and security organization. We must be world class not only in how we carry out our mission, but in the safe, secure, and environmentally responsible way in which we manage operations at our facilities across the country." The organization's FY 2008 budget request of $428 million, builds on a number of actions the Department has taken over the past two years to increase safety of DOE workers.

The FY 2008 budget includes $5.7 billion for the **Environmental Management** program to protect public health and safety by cleaning up hazardous, radioactive legacy waste left over from the Manhattan Project and the Cold War. Past investments have resulted in the completed clean up of 81 sites through the end of FY 2006, including Rocky Flats, Colorado, and a total of 86 sites by the end of FY 2007, including the Fernald site in Ohio, which was completed in January 2007. This budget allows the program to continue to make progress towards cleaning up and closing sites and focuses on activities with the greatest risk reduction.

As the Department continues to make progress in completing clean up, the FY 2008 budget request of $194 million for **Legacy Management** supports the Department's long-term stewardship responsibilities and payment of pensions and benefits for our former contractor workers after site closure.

The GNEP strategy complements the Department's Civilian Radioactive Waste Management program, which is working to address the problems of long-term nuclear waste disposal in an environmentally sound manner. The program office is working to construct a permanent repository for spent nuclear fuel at **Yucca Mountain**. Funding of $494.5 million is proposed in FY 2008 to support the development of a repository that will protect public health and safety in ways that are both environmentally and economically viable. The funding also supports the submission, not later than June 30, 2008, of a comprehensive License Application to the Nuclear Regulatory Commission for authorization to construct the repository.

In light of the increased number of sophisticated cyber attacks directed at all facets of our communities, from military to civilian to private users, the Department is taking significant steps to secure the virtual pathways and mitigate the threat from cyber intrusions. Implementing these steps will be seamless and will not interrupt the availability of information systems resources while preserving the confidentiality and integrity of the information and their contents. A budget request of $170 million in FY 2008 supports the Department's efforts to defend against emerging, complex cyber attacks. Through these efforts, the Department will be in a better position to effectively manage and monitor cyber risk across the complex. In FY 2008, DOE will increase support on a Department-wide basis to deploy new cyber security tools and cyber security management activities to detect, analyze, and reduce the threat across the complex.

PROMOTING AMERICA'S ENERGY SECURITY THROUGH RELIABLE, CLEAN, AND AFFORDABLE ENERGY

The FY 2008 budget request addressing energy and environmental security is an essential component of the Department's strategic goals. This priority is reflected in the increase of $506 million or 20 percent of the Department's energy programs compared to the FY 2007 budget request. These investments in research, development and deployment could strengthen America's energy security, environmental quality, and economic vitality through public-private partnerships that expand the use of cost-effective energy efficient technologies; enable and accelerate market adoption of clean, reliable and affordable energy technologies; and support the implementation of the President's National Energy Policy. Additionally, the energy programs at DOE are working with the basic research and scientific community to focus on development of technology components that could enable and catalyze the rapid development, commercialization and deployment of next generation energy technologies.

This budget includes President Bush's **Advanced Energy Initiative (AEI)** which aims to reduce our dependence on foreign sources of oil and transforming our national energy economy by promoting development of cleaner sources of electricity production. For too long, our nation has been dependent on oil. America's dependence leaves us more vulnerable to disruptions to domestic production like hurricanes, to hostile regimes, and to terrorists - who could cause huge disruptions of oil shipments, raise the price of oil, and do great harm to our economy. In concert with the President's **Twenty In Ten** initiative to reduce U.S. gasoline usage by 20 percent in the next ten years, or by 2017, a total of $2.7 billion is requested in FY 2008 to support the **AEI**. These funds support a diverse portfolio of energy research and development (R&D) and deployment programs designed to help meet the energy challenges of the 21st century. Highlights of the request include the following components of the President's AEI:

- **The President's Biofuels Initiative**. The President's goal to make cellulosic ethanol cost-competitive by 2012 is the focus of the biomass program. Biomass is the key renewable resource supported by the Department because it is a promising renewable option for producing liquid transportation fuels in the near term, thereby reducing our dependence on imported oil. In FY 2008, the Department is investing $179 million to support the goals of the initiative.
- **The President's Hydrogen Fuel Initiative**. This budget request includes $309 million (an increase of $19.5 million above the FY 2007 request) for the President's Hydrogen Fuel Initiative and completes the President's commitment of $1.2 billion over five years for this initiative. Increased funding is proposed to expand research in several areas, including: hydrogen production from renewables; materials for hydrogen storage; fuel cell stack components; and a new R&D effort on cost-effective manufacturing technologies to help industry build a competitive, domestic hydrogen and fuel cell supplier capability.
- **Vehicles Technologies and FreedomCAR.** This year's request emphasizes plug-in hybrid vehicle component technologies by increasing the requested research support to $81 million. These technologies offer the potential to make

significant additional improvements in petroleum reduction beyond that achievable with standard hybrid configurations. By utilizing energy drawn from the nation's electricity grid at off-peak times to charge high energy batteries, these technologies will be able to operate in an electric vehicle mode for expanded distances, potentially meeting most drivers' needs for commuting and short distance driving.

- **The President's Solar America Initiative (SAI).** Launched in FY 2007, SAI is designed to achieve cost competitiveness for photovoltaic (PV) solar electricity by 2015. With a request of $148 million in FY 2008, SAI seeks to achieve its mission through public-private partnerships with industry, universities, national laboratories, states, and/or other government entities.

The FY 2008 budget request also supports renewable energy and energy efficiency R&D that could help reduce the overall demand for natural gas and lower emissions in the electricity sector. The FY 2008 request for the **Wind Energy** program includes $40 million to continue wind energy research to reduce costs and overcome barriers to large-scale use of wind power. The FY 2008 budget also includes $19 million to continue the accelerated development of **Solid State Lighting** technologies that have the potential to reduce commercial building lighting electricity consumption by 50 percent and could revolutionize the energy efficiency, appearance, visual comfort, and quality of lighting.

Our energy portfolio also recognizes the abundance of coal as a domestic energy resource and remains committed to research and development to promote its clean and efficient use. Coal in the U.S. accounts for 25 percent of the world's coal reserves. The foundation of the Department's clean coal research program is the **FutureGen** project, which will establish the capability and feasibility of co-producing electricity and hydrogen from coal with near-zero atmospheric emissions. The Administration remains strongly committed to FutureGen and is requesting $108 million in FY 2008, consistent with the project plan to keep the project on schedule for start-up in 2012. An additional $246 million is requested within the Coal program to support research and development on technologies needed to realize the concept.

Funding for the Coal program will be partially derived from transferring $166 million in prior year balances from the **Clean Coal Technology** appropriation to the **Fossil Energy Research and Development** appropriation. These prior year balances are no longer needed for active Clean Coal Technology projects and will be used to support FutureGen ($108 million) and the **Clean Coal Power Initiative** ($58 million). Better utilization of these fund balances to support FutureGen and related technologies will generate real benefits for America's energy security and environmental quality. Using fund balances and new appropriations, in 2008 the Clean Coal Power Initiative will issue a solicitation for demonstration of technologies focusing on carbon sequestration.

As part of the greenhouse gas mitigation strategy, the Department continues to develop low cost **carbon sequestration** technology for both new and existing coal plants. To that end, the Department includes $79 million in FY 2008 for sequestration research and

development, including initiating work on four large-scale sequestration field tests, each of which will inject about one million tons per year of carbon dioxide. The carbon sequestration program, together with FutureGen and other supporting research, will assure the timely development of this technology that will be capable of eliminating 90 percent of carbon emissions from new coal fired plants.

Consistent with the FY 2006 and FY 2007 budget requests, the FY 2008 budget request continues to shift resources away from oil and gas research and development programs, which have sufficient market incentives for private industry support, to other energy priorities. The decision reflected strategic consideration by assessing the program's technical effectiveness and comparing it to other programs which have achieved more clearly demonstrated and substantial benefits. Federal staff, paid from the program direction account, will work toward an orderly termination of the program in FY 2008.

The Energy Policy Act of 2005 established a new mandatory oil and gas research and development (R&D) program, called the Ultra-Deep and Unconventional Natural Gas and Other Petroleum Research program, that is funded from federal revenues from oil and gas leases beginning in FY 2007. These R&D activities are more appropriate for the private-sector oil and gas industry to perform. Therefore the FY 2008 budget proposes to repeal the program through a separate legislative proposal.

To further assure against oil supply disruptions that could harm our economy, this budget also proposes $168 million to begin expanding the **Strategic Petroleum Reserve** to an ultimate capacity of 1.5 billion barrels by 2027 as announced by President Bush in his State of the Union address. DOE will begin filling the Reserve to its current capacity of 727 MB by immediately purchasing oil for the Reserve in FY 2007, and also placing the Department of the Interior's federal royalty in-kind oil into the Reserve in FY 2007 and FY 2008. The FY 2008 Budget requests funds to expand the capacity of the SPR to the one billion barrel capacity authorized by current law and funds to conduct National Environmental Policy Act work to expand to 1.5 billion barrels. The Administration will, through a separate legislative proposal, seek the necessary authority to increase the authorized capacity of the Reserve from one billion barrels to 1.5 billion barrels.

The Energy Policy Act of 2005 authorized the establishment of a new **Loan Guarantee Program**. This budget request includes $8.4 million to operate a Loan Guarantee Office. This program will centralize loan guarantee services for the Department to ensure all processes and criteria are applied uniformly in accordance with established requirements, procedures, guidelines, regulations and manage the assessment of all loan guarantee applications submitted to the Department in compliance with Title XVII of the Energy Policy Act of 2005. Section 1703 of that Act authorizes the Department to provide loan guarantees for renewable energy systems, advanced nuclear facilities, coal gasification, carbon sequestration, energy efficiency, and many other types of projects. The budget proposes an FY 2008 loan volume limitation of $9 billion. Of this amount, the Department will seek to guarantee approximately $4 billion in loans for central power generation facilities (for example, nuclear facilities or carbon sequestration optimized coal power plants); $4 billion in loans for projects that promote biofuels and clean

transportation fuels; and $1 billion in loans for projects using new technologies for electric transmission facilities or renewable power generation systems.

Reliable energy information plays a critical role in promoting efficient energy markets and informing the public and policy makers. This budget requests a total of $105 million for the Energy Information Administration to improve energy data and analysis programs, reflecting a 17 percent increase over the FY 2007 budget request.

Nuclear Energy

A staple in our energy portfolio, nuclear energy has the potential to drive our 21st century economy to produce vast quantities of economical hydrogen for transportation use without emitting greenhouse gases and to generate heat and clean water to support growing industry and populations worldwide. In FY 2008, a total of $874.6 million is requested for nuclear energy activities. Included in the total is $395 million for the **Advanced Fuel Cycle Initiative** to support the Global Nuclear Energy Partnership (GNEP). GNEP is a comprehensive strategy to: enable an expansion of nuclear power in the United States and around the world; promote nuclear nonproliferation goals; and help resolve nuclear waste disposal issues. An additional $10 million is requested within the nuclear nonproliferation budget to support safeguards technology development as part of the far-reaching GNEP strategy.

GNEP will build upon the Administration's commitment to develop nuclear energy technology and systems and enhance the work of the United States and our international partners to strengthen nonproliferation efforts. The GNEP strategy will accelerate efforts to:

- Provide abundant energy without generating carbon emissions or greenhouse gases;
- Recycle used nuclear fuel to minimize waste and reduce proliferation concerns;
- Safely and securely allow developing nations to deploy nuclear power to meet their energy needs;
- Assure maximum energy recovery from still-valuable used nuclear fuel; and
- Reduce the number of required U.S. geologic waste repositories to one for the remainder of this century.

Through GNEP, the United States will work with key international partners to develop new recycling technologies. Recycled fuel would be processed through advanced burner reactors to extract more energy, reduce waste and consume plutonium, dramatically reducing proliferation risks. As part of GNEP, the U.S. and other nations with advanced nuclear technologies would offer developing nations a reliable supply of nuclear fuel in exchange for their commitment to forgo enrichment and reprocessing facilities of their own, alleviating a proliferation concern.

GNEP would also help resolve America's nuclear waste disposal challenges. By recycling spent nuclear fuel, the heat load and volume of waste requiring permanent geologic disposal would be significantly reduced, delaying the need for another repository in addition to the one at Yucca Mountain for the remainder of this century.

To support the near-term domestic expansion of nuclear energy, the FY 2008 budget seeks $114 million for the **Nuclear Power 2010** program to support continued cost-shared efforts with industry to reduce the barriers to the deployment of new nuclear power plants in the United States.

The technology focus of the Nuclear Power 2010 program is on Generation III+ advanced light water reactor designs, which offer advancements in safety and economics over older designs. If successful, this seven-year, $1.1 billion project (50 percent to be cost-shared by industry) could result in a new nuclear power plant order by 2009 and a new nuclear power plant constructed by the private sector and in operation by 2014.

The Energy Policy Act of 2005 authorized the Secretary to enter into standby support contracts for six new advanced nuclear reactors. The program will allow DOE to offer **standby support/risk insurance** to protect sponsors of the first new nuclear power plants against the financial impact of certain delays that are beyond the sponsors' control. This program would cover 100 percent of the covered cost of delay, up to $500 million for the first two new reactors, and 50 percent of the covered cost of delay, up to $250 million each, for up to four additional reactors. This risk insurance offers project sponsors additional certainty and incentive to provide for the construction of a new nuclear power plant by 2014. In FY 2008, the Department will receive and evaluate applications for standby support contracts from sponsors of new nuclear power plants.

The FY 2008 budget request includes $36 million to continue to develop next-generation nuclear energy systems known as **"Generation IV (GenIV)"**. These technologies will offer the promise of a safe, economical, and proliferation resistant source of clean, reliable, sustainable nuclear power with the potential to generate hydrogen for use as a fuel. Resources in FY 2008 for GenIV will be primarily focused on long-term research and development of a gas-cooled very-high temperature reactor, the reactor technology of choice for the Next Generation Nuclear Plant (NGNP) project.

STRENGTHENING U.S. SCIENTIFIC DISCOVERY, ECONOMIC COMPETITIVENESS, AND IMPROVING QUALITY OF LIFE THROUGH INNOVATIONS IN SCIENCE AND TECHNOLOGY

Today our nation's ability to sustain a growing economy and a rising standard of living for all Americans depends in part on continued advances in science and technology. Scientific and technological discovery and innovation are engines of increasing productivity and are indispensable to ensuring economic growth, job creation, and rising incomes for American families in the technologically driven 21st century.

The FY 2008 Office of Science budget request of $4.4 billion or 7 percent above the FY 2007 request is designed to sustain the planned doubling of Federal support for physical sciences research by FY 2017 under the American Competitiveness Initiative. Given the large-scale nature of Office of Science facilities and the thousands of scientists and researchers receiving DOE support for their research and education, sustained and

predictable budgetary trajectories are essential to preserve America's vitality in science and avoid an attrition of U.S. scientific talent.

DOE's Office of Science has played a central role over the last 50 years in supporting and sustaining institutional research in the physical sciences in the United States. Among Federal agencies, it is the largest supporter of basic research in the physical sciences, providing over 40 percent of such funding. The Office of Science is the main builder and operator of large-scale scientific facilities and instruments that are increasingly important to physical sciences research and maintains and operates ten major national laboratories that have been seedbeds of scientific discovery, technological innovation, and economic progress. Office of Science funding also plays an indispensable role in training, educating, and sustaining the nation's scientific workforce. Each year, Office of Science facilities meet the needs of a diverse set of 20,000 researchers. Thousands of university researchers—professors, "post-docs", and undergraduate students—also rely, each year, on Office of Science support. Roughly half of the researchers at Office of Science-run facilities come from universities, and about a third of Office of Science research funds go to institutions of higher learning.

The Office of Science is also the main federal sponsor of basic research aimed at achieving the scientific breakthroughs necessary to meet our nation's growing energy challenge by developing alternative, carbon-free or carbon neutral sources of energy to enhance our energy security and protect the global environment.

Many scientists believe there is a real promise that biotechnology may transform the field of energy production—providing transformational breakthroughs that will enable the cost-effective, homegrown production of biofuels that can eventually meet much of our transportation energy demand and substantially reduce net carbon dioxide emissions. Today the Genomics: GTL program supports advanced biotechnology tools and techniques to probe for biological and biologically inspired solutions to Department mission challenges in energy, carbon sequestration, and environmental remediation. The FY 2008 request includes $75 million for three innovative Bioenergy Research Centers that will bring together multi-disciplinary teams of some of the nation's leading researchers in a mission-driven laboratory setting to probe plants and microbes at all levels (molecular, cellular, system) in an effort to crack nature's code and achieve the breakthroughs that will make biofuel production cost-effective on a national scale.

The capacity to create new, stronger, more durable, or more energy efficient materials—"smart" materials that respond to the environment, improved catalysts for oil refining, better batteries, more efficient windows, to name only a few applications—increases as we gain the tools and expertise to manipulate matter at the atomic level. These scientific advances contribute to improving our way of living. This year, the Office of Science will continue this work by completing construction of the last Nanoscale Science Research Center in FY 2008, and the FY 2008 request provides $20 million each for operations at the Office's five Nanoscale Science Research facilities. In addition, construction continues on the Linac Coherent Light Source, the world's first x-ray free electron laser, which will enable us to observe chemical reactions at the molecular level in real time. Project engineering and design funds are also provided for the proposed National

Synchrotron Light Source II, which would provide unique capabilities for probing structural biology and nanostructures and observing materials under extreme conditions.

Computational power gives scientists the capability to explore complex systems and simulate experiments that would be impossible to perform in a laboratory. With the FY 2008 budget request, the Office of Science performance goal is attainment of roughly one petaflop, which is a million billion operations per second, of computational capability to sustain the Department's position as world leader in civilian computing power. The Advanced Scientific Computing Research request increases by $21.5 million over the FY 2007 request.

Progress in energy-related and use-inspired basic science builds on the foundation of discovery in more fundamental science. These investigations into the very nature and origins of our universe expand the horizons of our knowledge, providing insight into who we are and where we come from. Within the $4.4 billion request for Science, $146.5 million is provided for operations of the Relativistic Heavy Ion Collider (RHIC), which enables us to glimpse conditions of the very early universe, and $79.2 million is for the Continuous Electron Beam Accelerator Facility (CEBAF), which provides insight into the quark structure of matter.

Within high energy or particle physics, research promises to radically transform our understanding of the structure of matter, space, and time. Within the Office of Science budget request, $158 million is provided for operations of the Tevatron at Fermilab for collider and neutrino physics programs. In addition, the request provides $62 million to support the research of U.S. scientists at the Large Hadron Collider in CERN, which will be the world's most powerful accelerator. R&D support is maintained for the International Linear Collider, to maintain a strong U.S. role in the development of this potential next-generation accelerator, which promises to further illuminate the nature of matter at terascale energies.

In the Asia-Pacific Partnership, we are a vital member of the international effort to promote the development and deployment of clean energy goods and services among our Pacific-Rim partners; Australia, China, Japan, India and South Korea. To date, the partnership has launched nearly a hundred projects that advance energy efficiency, clean development and common standards on which new clean energy technology and programs can be built. This partnership has created a forum where American companies can learn, compete, and innovate, in a region with extraordinary economic growth, energy demands and market potential. The $15 million requested to support the partnership will be in concert with contributions from private-sector and international partners.

Finally, on November 21, 2006, the U.S. Department of Energy signed an agreement with China, the European Union, India, Japan, the Republic of Korea and the Russian Federation to build the international fusion energy project known as ITER. Under this arrangement of international scientific cooperation, these nations will collaborate to construct an experimental reactor that will put the world on a path toward harnessing fusion energy—the fuel that powers the stars—for the production of plentiful,

environmentally friendly, carbon-free energy. The request provides $160 million for the U.S. contribution to this international effort.

ENSURING AMERICA'S NUCLEAR SECURITY

The President, in his first days in office, was faced with the new and challenging realities of national security in the 21st century. The War on Terror has substantially and fundamentally reshaped the national security programs and activities in the Department. This budget of $24.3 billion for the Department is an important component of the President's strategy to address some of these very important issues facing our nation. Within the $24.3 billion request in FY 2008, $9.4 billion or 39 percent is proposed to support DOE's contribution to the Federal government-wide effort to ensure the security of our nation.

The National Nuclear Security Administration (NNSA) continues significant efforts to meet Administration and Secretarial priorities leveraging science to promote national security. The FY 2008 budget proposes $9.4 billion to meet defense and homeland security-related objectives. The budget request maintains current commitments to the nuclear deterrence policies of the Administration's Nuclear Posture Review. To implement those policies for the long term, NNSA has established a new planning scenario, "Complex 2030", to guide the transformation of the complex. The FY 2008 budget also continues to fund a high profile strategy to mitigate throughout the world the threat of weapons of mass destruction, and provides for the nuclear propulsion needs of the U.S. Navy. Key investments include:

- Transforming the nuclear weapons stockpile and infrastructure while meeting Department of Defense requirements, through the Reliable Replacement Warhead and other Complex 2030 initiatives;
- Conducting innovative programs in the nations of the former Soviet Union and other countries to address nonproliferation priorities;
- Supporting naval nuclear propulsion requirements of the U.S. Navy;
- Maintaining comprehensive security for facilities, employees and information implementing and sustaining upgrades throughout the complex;
- Providing nuclear emergency response assets in support of homeland security;
- Reducing the deferred maintenance backlog and achieving facility footprint reduction goals; and,
- Providing corporate management and oversight for NNSA programs and operations.

The United States continues a fundamental shift in national security strategy to address the realities of the 21st century. The Administration's Nuclear Posture Review (NPR) addressed a national security environment in which threats may evolve more quickly and be less predictable and more variable than in the past. The NPR recognizes the need to transition from a threat-based nuclear deterrent with large numbers of deployed and reserve weapons, to a deterrent consisting of a smaller nuclear weapons stockpile with greater reliance on the capability and responsiveness of the Department of

Defense (DoD) and NNSA infrastructure to respond to threats. The NNSA infrastructure must be able to meet new requirements in a timely and agile manner while also becoming more sustainable and affordable. The Department of Energy has created a plan for a revitalized nuclear weapons complex called "Complex 2030." This significantly more agile and responsive complex will allow further reductions in the nuclear stockpile by providing an industrial hedge against geopolitical or technical problems and will reduce security costs by consolidating nuclear materials. The FY 2008 President's Budget contains some of the resources required for transformation of the Complex in ongoing base program activities that are already underway and contributing to Complex 2030 objectives. The Administration is still studying plans and funding projections for other parts of the effort.

The FY 2008 budget request of $6.5 billion for **Weapons Activities** includes all programs to meet the immediate needs of the stockpile, stockpile surveillance, annual assessment, and life extension programs. On November 30, 2006, the Nuclear Weapons Council determined that the **Reliable Replacement Warhead** (RRW) program was feasible as a means for sustaining the long-term safety and reliability of the nation's nuclear deterrent force. This shift in strategy from a Life Extension Program to a RRW program will require substantial planning and resource realignments by the Departments of Defense (DoD) and Energy. The Campaigns are focused on long-term vitality in science and engineering and on R&D supporting current and future stockpile stewardship and DoD requirements. A number of these NNSA programs and facilities also support scientific research users from other elements of the Department, Federal government, and the academic and industrial communities. Within the Nuclear Weapon Incident Response programs, a new National Technical Nuclear Forensics R&D and operations program is established, as well as a stabilization program through leveraged Render Safe R&D development of first generation equipment in support of homeland security. NNSA's **Safeguards and Security** activities are also encompassed within the request for Weapons Activities. The Defense Nuclear Security program supports the physical security needs at NNSA sites. These activities increase by 17 percent to sustain base program increases associated with the FY 2003 DBT upgrades, and a revised schedule for 2005 Design Basis Threat implementation at NNSA sites. Cyber Security activities, protecting information and information technology infrastructure, increase by over 15 percent. This will provide for the first step in a major five-year effort focused on revitalization, certification, accreditation and training across the NNSA complex.

Preventing weapons of mass destruction from falling into the hands of terrorists and rogue states is one of this Administration's top national security priorities. The FY 2008 request of $1.67 billion for nuclear nonproliferation activities strongly supports the international programs that are denying terrorists and rogue states the nuclear materials, technology and expertise needed to develop or otherwise acquire nuclear weapons. NNSA continues unprecedented efforts to protect the U.S. and our allies from threats, including $265 million for cutting-edge **nonproliferation research and development** for improved technologies to detect and monitor nuclear proliferation and nuclear explosions worldwide. There are additional major efforts focused on potential threats abroad. For example, in the area of **nuclear material protection and cooperation** the program has completed security upgrades for Russian navy nuclear fuel and weapons

storage at the end of FY 2006 and will complete security upgrades for Rosatom facilities by the end of FY 2008. Also by the end of FY 2008, the program will complete security upgrades at the nuclear warhead sites of the Russian Strategic Rocket Forces and the 12th Main Directorate. To help complete the shutdown of three Russian nuclear reactors still producing 1.2 metric tons of plutonium per year and to replace them with conventional fossil fuel power plants, this budget request includes $182 million for the Elimination of Weapons Grade Plutonium Production program.

The budget includes a request of $334 million for the U.S. **Mixed Oxide Fuel Fabrication Plant** project at DOE's Savannah River Site in South Carolina. This facility will dispose of 34 metric tons of U.S. surplus plutonium and facilitate complex-wide consolidation of nuclear material. The project is awaiting Congressional authorization to proceed to construction. Various programs funded by NNSA's Defense Nuclear Nonproliferation appropriation support the President's Bratislava Nuclear Security Cooperation initiative (about $293 million) including security upgrades at Russian nuclear warhead sites, and also support the Global Partnership against the Spread of Weapons of Mass Destruction ($537 million) to meet the U.S. commitment to the G8 nations. In coordination with the Office of Nuclear Energy, the budget request also includes $10 million to support the Global Nuclear Energy Partnership (GNEP), which is focused on advanced safeguards technology development that is crucial to the ultimate success of the GNEP initiative.

NNSA continues to support the United States Navy's nuclear propulsion systems. The FY 2008 request of $808.2 million is an increase of 1.6 percent over the FY 2007 request level. The funding increase assists the Naval Reactors program to ensure the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements.

PROTECTING THE ENVIRONMENT BY PROVIDING A RESPONSIBLE RESOLUTION TO THE ENVIRONMENTAL LEGACY OF NUCLEAR WEAPONS PRODUCTION

The Federal Government must address the legacy of our past and our responsibility to the American taxpayers to provide a clean, safe and healthy environment to live in. A total of $6.34 billion is dedicated in FY 2008 to support the three key pillars that set the framework for the Department to reach that goal. The first pillar is to continue our **environmental cleanup** ($5.7 billion) of contaminated Cold War sites across the country. The second pillar is to continue to provide **site post-closure management** and to carry out our responsibilities ($194 million) to our former contractor workers. The third pillar completes the framework by working to construct a permanent nuclear waste repository at **Yucca Mountain** ($494.5 million) to address long-term nuclear waste disposal and for authorization of which the Department will submit a License Application to the Nuclear Regulatory Commission not later than June 30, 2008. And it goes without saying that my core principle of safe operations throughout the Department will be applied with vigor within this framework.

To deliver on the Department's cleanup obligations stemming from 50 years of nuclear research and weapons production during the Cold War, the Environmental Management program (EM) continues to focus its resources on the highest health and safety risks, such as treatment of over 90 million gallons of radioactive liquid waste stored in decades old tanks; disposition of thousands of metric tons of special nuclear material (surplus weapons-grade uranium and plutonium), spent nuclear fuel, and solid waste stored in older facilities that do not meet today's environmental requirements; and remediation of contaminated soil and groundwater. Up through FY 2007, DOE has completed cleanup of 86 of 108 legacy nuclear waste sites, with another three site cleanup completions – the Pantex Plant in Texas; Lawrence Livermore National Laboratory - Site 300 in California, and the Inhalation Toxicology Lab in New Mexico – planned for completion in FY 2008.

In FY 2008, the budget includes $5.7 billion to continue cleanup, giving priority to those activities that offer the greatest risk reduction while staying focused on completing cleanup and closing sites. This is a reduction from the FY 2007 request of $173 million, which in part reflects completion of some sites, but also reflects hard choices that must be made. Safety remains the utmost priority. EM is committed to applying my safety principles and will continue to maintain and demand the highest safety performance to protect the workers and the communities where EM operates.

In keeping with the principles of reducing risks and environmental liabilities, the FY 2008 request of $5.7 billion will support the following priority activities:

- Stabilizing radioactive tank waste in preparation for treatment (about 31 percent of the FY 2008 request);
- Storing and safeguarding nuclear materials and spent nuclear fuel (about 17 percent of the FY 2008 request);
- Dispositioning transuranic, low-level and other solid wastes (about 16 percent of the FY 2008 request);
- Remediating major areas of our sites and decontamination and decommissioning excess facilities (about 26 percent of the FY 2008 request).

One of the significant cleanup challenges the EM program faces is the construction of the Hanford Waste Treatment and Immobilization Plant (WTP), which will treat highly radioactive tank waste at Hanford. WTP has encountered significant technical and project management problems, which have caused the project to slow down while the problems were addressed. With the help of senior professionals from private industry, academia and other Government agencies, EM has undertaken an intensive review scrutinizing key elements of the project, including the technology, cost and schedule, project management, project controls, and earthquake seismic criteria. In December 2006, the Department approved a revised, validated baseline of $12.3 billion for WTP. The Department believes WTP is now back on a sound technical and project management footing, and is ready to move forward.

Despite numerous accomplishments and successfully accomplishing site completions, the EM program has experienced setbacks in achieving its vision of accelerated cleanup. At

the core of these setbacks are optimistic planning assumptions that have not materialized, combined with new scope and requirements that were not anticipated. As a result, EM estimates the lifecycle cost of the program could increase by $50 billion. EM continues to take steps to address challenges and improve the effectiveness and efficiency of its operation. The Department remains committed to completing this important and necessary mission.

After the Environmental Management program completes cleanup of sites throughout the DOE complex, post closure stewardship activities are transferred to the **Office of Legacy Management** (LM). Post closure stewardship includes long-term surveillance and maintenance activities such as groundwater monitoring, disposal cell maintenance, records management, and management of natural resources at sites where active remediation has been completed. At some sites the program includes management and administration of pension and benefit continuity for contractor retirees. In FY 2008, $194.2 million is requested to carry out legacy management functions. The majority of the funding is for long-term stewardship activities and pension and post-retirement benefits for former contractor employees at the Rocky Flats, Colorado, and the Fernald, Ohio, closure sites.

Over the last 50 years, our country has benefited greatly from nuclear energy and the power of the atom. We need to ensure a strong and diversified energy mix to fuel our nation's economy, and nuclear power is an important component of that mix. Currently more than 50,000 metric tons of spent nuclear fuel is located at over 100 above-ground sites in 39 states, and every year reactors in the United States produce an additional approximately 2,000 metric tons of spent fuel. In order to ensure the future viability of our nuclear generating capacity, we need a safe, permanent, geologic repository for spent nuclear fuel and high-level nuclear waste at **Yucca Mountain**. The FY 2008 budget of $494.5 million sets us on the path to meet that goal. The funding will support the development of a repository including:

- Filing and defending a high quality License Application at the Nuclear Regulatory Commission (NRC) based on a simpler and safer approach to handling spent nuclear fuel and operating the repository not later than June 30, 2008;
- Continuing the planning and design for facilities required for the receipt of spent nuclear fuel and high-level waste for emplacement in the repository;
- Making critical infrastructure upgrades at Yucca Mountain to ensure worker, regulator, and visitor safety and operational efficiency; and
- Continuing critical interactions needed to support national transportation planning activities and issuance of the Nevada Rail Alignment Environmental Impact Statement.

Designing, licensing and constructing a permanent geologic repository for spent nuclear fuel and high level waste will resolve the challenge of safe disposal of these materials and make construction of new nuclear power plants through the President's **Global Nuclear Energy Partnership** (GNEP) more feasible, helping to expand our energy options and secure our economic future. In addition, a repository is necessary to support nuclear nonproliferation goals, contributing to national security objectives.

In late 2006, the Department announced its plans to submit a License Application for the repository to the NRC by June 30, 2008, and to initiate repository operations in 2017. This opening date of 2017 is a "best-achievable schedule" and is predicated upon enactment of pending legislation. This proposed legislation addresses many of the uncertainties, currently beyond the control of the Department, that have the potential to significantly delay the opening date for the repository. The legislative proposal that the Administration submitted to Congress in 2006 and will resubmit in this Congress addresses significant funding reform and regulatory issues that, if enacted, would allow the Department to secure the necessary fiscal resources needed for program success and clears the path for the program to move forward expeditiously.

CONCLUSION

I appreciate the opportunity to appear before you to present the FY 2008 budget proposal for the Department of Energy. I will be happy to take any questions that members of the Committee may have.