Statement of Robert Shane Johnson
Deputy Director for Technology
Nuclear Energy, Science and Technology
U.S. Department of Energy

before the

Subcommittee on Energy
Committee on Science
U.S. House of Representatives

April 27, 2005

Chairman Biggert, Representative Honda, and Members of the Subcommittee**,** it is a pleasure to be here to discuss the Fiscal Year (FY) 2006 budget submission for DOE's Office of Nuclear Energy, Science and Technology.

In his February 2nd State of the Union Address, the President underscored the need to restrain spending in order to sustain our economic prosperity. As part of this restraint, it is important that total discretionary and non-security spending be held to levels proposed in the FY 2006 Budget. The budget savings and reforms in the Budget are important components of achieving the President's goal of cutting the budget deficit in half by 2009 and we urge the Congress to support these reforms. The FY 2006 Budget includes more than 150 reductions, reforms, and terminations in non-defense discretionary programs, of which six affect Department of Energy programs. The Department wants to work with the Congress to achieve these savings.

Of these six programs, two programs are from the Office of Nuclear Energy, Science and Technology: the Nuclear Energy Plant Optimization (NEPO) and the Nuclear Energy Research Initiative (NERI) programs. Research conducted under the NEPO program is designed to assure the ability of currently operating nuclear power plants to remain in service up to and beyond their licensed operating period. No funding is requested for the NEPO program in FY 2006 because industry is committed to continuing the research begun under NEPO without DOE support, allowing DOE to focus on higher priority activities. No stand-alone funding is requested for the NERI program as the Department's principal nuclear energy research and development (R&D) programs (Generation IV Nuclear Energy Systems Initiative, Advanced Fuel Cycle Initiative, and Nuclear Hydrogen Initiative) will be sponsoring NERI research projects within the Nation's university research community to enhance the research cooperation between academia and our national laboratories and to strengthen our mainline R&D programs.

For most of our Nation's history, America's vibrant economy and society have benefited from the abundant energy options we have had available. Even though we experienced oil price shocks in the 1970s and 1980s, the vast majority of the energy used in the United States is, even today, produced in the United States. Our coal, oil, natural gas,

nuclear, and renewable resources all contribute to a diversified and reliable energy picture.

However, we are entering a new era in energy supply. As highlighted in the President's *National Energy Policy*, forecasts indicate that our need for energy—even with ambitious implementation of energy efficiency measures across all sectors of the economy—will continue to grow as our economy grows. The Energy Information Administration forecasts that by 2025, the United States will import 38% of all of its energy and 68% of its energy for transportation uses. Buried in these estimates is an ominous fact that has escaped casual notice—the U.S. will, over this period, begin a steadily increasing dependence on imports for fuels needed for electricity generation that may, over the coming decades, follow the patterns of our accelerating dependence on imports required for the transportation sector.

To meet these challenges while still assuring America's access to reliable baseload electricity—while setting a path toward reduced emissions—we must apply advanced technologies. New technology can help us to exploit renewable energy sources when they are practical, and enable coal to continue as a viable, long-term element of our energy supply. And as the President conveyed in his State of the Union address, we must consider new nuclear energy as part of our long-term energy picture.

The Department of Energy's nuclear energy program has made significant progress over the past several years. From the time, not so many years ago, when it appeared that the United States might abandon advanced nuclear research and development, we have been successful in reasserting U.S. leadership in this area around the world. Representing the United States, I have been elected by my international colleagues to serve as the chair of two important international bodies—the Organization of Economic Cooperation and Development Steering Committee on Nuclear Energy and the Generation IV International Forum.

We continue to build on our leadership. Just a few weeks ago, we celebrated the launch of the Nation's central laboratory for nuclear research and development—the Idaho National Laboratory (INL). This new national laboratory combines the resources of the former Idaho National Engineering and Environmental Laboratory (INEEL) and the former Argonne National Laboratory-West (ANL-W). The INL will lead much of the Department's exploration into advanced nuclear reactor and fuel cycle technology. We have set an aggressive goal for the new INL to become the world's premier center for nuclear energy research and education within a decade.

Developing a central research laboratory is a major step forward for the nuclear energy program. We, like other key energy programs at the Department, have created a central, dedicated research site at which we can consolidate our infrastructure investments and build the expertise needed to accomplish our long-term program goals. A central lab also helps us minimize the shipment of nuclear materials across the country and allows us to bring our nuclear materials together in a single, secure location. In addition, we expect that our new central, dedicated research laboratory will become a major player in the

education of the next generation of nuclear energy technologists that this Nation will need to assure our energy security in the future.

The Department's FY 2006 request for the nuclear energy program proposes a $511 million (an increase of $25 million compared to FY 2005) investment in nuclear research, development, education and infrastructure for the Nation's future that is designed to continue this progress. This budget request demonstrates our commitment to support the President's priorities of enhancing the Nation's energy independence and security while limiting air pollution. Our request supports the development of new nuclear generation technologies and advanced energy products that will provide significant improvements in the economics, sustainability, safety and reliability of nuclear-based energy, as well as its resistance to proliferation and terrorism.

We are committed to efficiently managing the funds we are provided. We have abandoned outdated field office and laboratory management paradigms and have integrated the Idaho Operations Office with our headquarters organization, enabling us to closely manage our responsibilities in the field to achieve greater quality and efficiency. We are enhancing our expertise in critical areas such as project management through training and certification of existing staff and the acquisition of experienced, proven managers. We are also applying international and public-private partnerships in the implementation of our research and development programs as a way of leveraging our investments and assuring the utility of our programs. We believe these steps must be taken to assure our program's ability to make the best use of the taxpayer dollars.

While we have made great progress in all these areas, much remains to be done. Our FY 2006 request moves us in the right direction.

FISCAL YEAR 2006 BUDGET REQUEST

NUCLEAR POWER 2010

Today, American utilities operate 103 nuclear power plants. These facilities operate reliably and efficiently and provide a fifth of the Nation's electricity. These plants are emissions-free and can operate year-round in all weather conditions.

Over the last 15 years, nuclear utilities in the United States have been increasingly better managed, improving both efficiency and safety. In the early 1990s, U.S. plants were available to produce energy only 70% of the time on average. These plants are now producing power over 90% of the time. More efficient operation has allowed nuclear plant operators to produce more energy than ever before, adding the equivalent of 25 new nuclear plants to the U.S. grid since 1990 without building any new nuclear power plants.

Consolidation of nuclear plant ownership to a fewer number of excellent operators has made the operation of U.S. plants safer than ever, more cost-effective, and more reliable. Companies acquiring nuclear plants are the leaders in the nuclear industry with high marks in operating performance. These utilities bring newly acquired plants the benefit

of economies of scale, experienced staff, well-honed management processes. As a result of this success, essentially all U.S. nuclear plants are expected to apply for renewed licenses that will keep most plants in operation into the middle of the century. There will also be some new generation, with The Tennessee Valley Authority rebuilding a plant that ceased operating in 1985. TVA expects to invest $1.8 billion to bring a 1,065-megawatt plant on-line by 2007.

With renewed interest from industry, the Department is investing in the Nuclear Power 2010 Program. This program's basic missions are to cost-share with industry demonstration of new, untested Nuclear Regulatory Commission licensing processes, finding sites on which to build new plants, and certifying state-of the art (or "Generation III+) designs for new nuclear power plants. The program also conducts economic studies and analysis that help point to the barriers facing the construction of new plants.

While it is too early to determine success, this program appears to be on the right track. Three utilities are cooperating with the Department to obtain "Early Site Permits" for three sites across the country—the first time this important regulatory tool has ever been used. The Nuclear Regulatory Commission is currently reviewing the utilities' applications and is expected to issue these permits during FY 2006. Once done, these utilities will have sites that are pre-approved by regulators to host new plants. This process will avoid the problems in siting that vastly escalated the cost of some plants in the 1980s and led to the abandonment of others (most notably the Shoreham plant in New York).

In November 2004, the Nuclear Power 2010 program took its next major step by awarding two major projects to utility-led consortia to implement plans that could lead to the construction and operation of new U.S. nuclear plants. Central to this effort, these projects will demonstrate—again, for the first time—the Nuclear Regulatory Commission's combined Construction/Operating License (or "one-step" license) process. These projects 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.

In addition to regulatory barriers, it is also important to deal with the financial barriers facing new nuclear power plant projects. Under the Nuclear Power 2010 program, DOE sponsored an independent study by the University of Chicago's Department of Economics. This study found that the first few nuclear power plants built in the United States would be too costly for utilities to build because of early plant costs. These high initial costs arise because the United States has not built nuclear plants in a very long time—the resulting new design, construction, licensing, and financial uncertainties are reflected as higher costs. However, the study found that once these early plant costs are absorbed, new nuclear power plants may be less expensive to build and operate than either coal-based power plants or natural gas-fired plants.

The need to deal with these early plant costs is expected to become a central issue for the industry as the Nuclear Power 2010 program addresses the institutional barriers. Without the construction of new plants, the contribution of nuclear power as a percentage of the

nation's total energy mix will steadily decline. Supporting nuclear power helps to maintain a more diversified energy supply and, because it is emissions-free, will not contribute to air pollution—nuclear power today comprises almost 75% of all the non-emitting power generation in the country. The President's Budget supports continuation of the Nuclear Power 2010 initiative in FY 2006 with a request of $56 million (an increase of $6.4 million compared to FY 2005).

FISCAL YEAR 2006 BUDGET REQUEST

GENERATION IV NUCLEAR ENERGY SYSTEMS INITIATIVE

Our Generation IV effort continues to make significant progress. Since the Generation IV International Forum (GIF) and the Nuclear Energy Research Advisory Committee (NERAC) issued their joint report, *A Technology Roadmap for Generation IV Nuclear Energy Systems*, the members of the Forum have expanded to include Switzerland and the European Union. The now eleven members (Argentina, Brazil, Canada, the European Union, France, Japan, the Republic of Korea, the Republic of South Africa, Switzerland, the United Kingdom and the United States) have organized into interest groups associated with each of the six selected Generation IV.

A landmark international framework agreement for collaborative research and development among the GIF member countries was signed in Washington, D.C., by the United States and its GIF partners on February 28, 2005. The *Framework Agreement for International Collaboration on Research and Development of Generation IV Nuclear Energy Systems*, which has been under negotiation for the past year, will allow the United States and its partner countries to embark on joint, cost-shared research and development of Generation IV nuclear energy systems. These next-generation nuclear technologies offer the potential for significant improvements in sustainability, proliferation resistance, physical protection, safety and economics. The agreement will further the development of advanced technologies that are widely acceptable; enable the Department to access the best expertise in the world to develop complex new technologies; and allow us to leverage our scarce nuclear R&D resources.

With this agreement in place, we are moving forward with these countries to develop advanced reactor technologies that could be made available in the 2020 to 2030 timeframe. Generation IV concepts offer significant improvements in the sustainability, proliferation resistance, physical protection, safety and economics of nuclear energy. These advanced systems will not only be safe, economic and secure, but will also include energy conversion systems that produce non-electricity products such as hydrogen, desalinated water and process heat. These features make Generation IV reactors ideal for meeting the President's energy and environmental objectives.

We will explore a range of Generation IV concepts, including the Supercritical Water-Cooled Reactor, the Gas-Cooled Fast Reactor and the Lead-Cooled Fast Reactor. Our efforts will focus on establishing technical and economic viability, and developing core and fuel designs, and advanced materials for these concepts. We request $45 million (an

increase of $5.3 million compared to FY 2005) support our investigation of technical and economic challenges and risks, including waste products, to inform a decision on whether to proceed with a demonstration of the Next Generation Nuclear Plant (NGNP), which would use very high temperature reactor technologies to economically produce both electricity and hydrogen gas. The President's Budget supports advanced research into the systems, materials, and fuels that are needed to bring Generation IV concepts to fruition. Key to the strategy for conducting all Generation IV research and development is the multiplication effect derived from international collaboration. By coordinating U.S. efforts with those of the GIF partner nations, our funding is leveraged by a factor of two to ten, depending on the reactor concept involved.

We are also working in close cooperation with the Department's Office of Science through the "Materials for Advanced Energy Systems Initiative" to coordinate the research advanced materials for use in Generation IV nuclear energy systems, fusion energy systems, and advanced energy technologies such as hydrogen production systems. Through a joint working group, the offices are coordinating on energy materials related issues with the purpose of investigating materials behavior in high temperature, radiation, and hostile corrosive environments, as well as the fabrication and non-destructive evaluation or monitoring of such materials. As common projects are identified, the offices will work to establish research objectives and cooperative work plans to leverage research funding.

FISCAL YEAR 2006 BUDGET REQUEST

NUCLEAR HYDROGEN INITIATIVE

Hydrogen offers significant promise as a future domestic energy source, particularly for the transportation sector. The use of hydrogen in transportation will reduce U.S. dependence on foreign sources of petroleum, enhancing national security. Hydrogen can be combusted in a traditional internal combustion engine, or can produce electricity in a fuel cell. Significant progress in hydrogen combustion engines and fuel cells is bringing transportation using hydrogen closer to reality. Before hydrogen can become a significant part of the Nation's energy infrastructure, the cost associated with the production, storage, and delivery of hydrogen must be reduced considerably.

Today, through electrolysis, we can convert water to hydrogen using electricity. Without using a non-emitting technology, such as nuclear or renewable energy, to produce the electricity, the environmental benefits of electrolysis are negated. We believe that for the future, Generation IV systems coupled with advanced hydrogen production technology offer a more efficient technology for production of large quantities of hydrogen without release of greenhouse gases. This technology could pave the way for the commercial production of clean-burning hydrogen for transportation purposes—reducing our reliance on imported fossil fuels and supporting the President's vision for a future Hydrogen economy.

The *DOE Hydrogen Posture Plan* and the *Nuclear Hydrogen R&D Plan* outline our plan for integrating and implementing technology research, development and demonstration

activities needed to cost-effectively produce, store, and distribute hydrogen for use in fuel cell vehicles and electricity generation. These documents are revised periodically and used to inform our annual budget requests. Technology development work to date, which has been conducted in accordance with these plans, has proven successful. For example, last year, experiments were successfully completed on individual high-temperature electrolysis cells for hydrogen production. Since the results show that the hydrogen output of the cells closely matched the theoretical calculations, this year we are evaluating the performance of stacks of cells to achieve higher hydrogen production rates. In FY 2006, the program will proceed with the plan to test cell stacks for long-duration and transient operation. As a result of these achievements, the FY 2006 budget request includes an increase of $11 million to conduct research and development on processes that operate across a range of temperatures for various advanced reactors being considered under the Generation IV Nuclear Energy Systems Initiative.

FISCAL YEAR 2006 BUDGET REQUEST

ADVANCED FUEL CYCLE INITIATIVE

In addition to leading the development of a new generation of nuclear power plants, the Department is developing and demonstrating technologies that will enable the United States and other advanced countries to implement an improved, long-term nuclear fuel cycle that provides substantial environmental, nonproliferation, and economic advantages over the current once-through nuclear fuel cycle. The Advanced Fuel Cycle Initiative is a research program to develop new technologies for reducing the volume, toxicity, and longevity of the high-level nuclear wastes that result from the production of energy from nuclear power plants. The initiative is designed so that these technologies can be made available to support the operation of current nuclear power plants, Generation III+ light-water reactors, and Generation IV advanced reactors in order to achieve a significant reduction in the amount of high-level radioactive waste requiring geologic disposal; to significantly reduce the amount of plutonium accumulated in civilian spent nuclear fuel; and to extract more useful energy from nuclear fuel.

Under all scenarios, the Nation will need to establish a permanent geological repository to deal with the radioactive wastes resulting from the operation of nuclear power plants. Substantial growth in the use of nuclear energy in the United States will require the construction of additional geologic repositories to address the nuclear waste generated over time. The advanced research conducted under the Advanced Fuel Cycle Initiative, if successful, could provide an alternative to building multiple “Yucca Mountains” while still supporting an expanding role for nuclear power in the United States. In the longer term, the Advance Fuel Cycle Initiative could enable us to extend the useful life of the Yucca Mountain repository and reduce the radiotoxicity of the wastes it contains such that it would decay to the toxicity of natural uranium ore in less than 1,000 years—instead of over 100,000 years as is the case with untreated spent fuel. This technology could also allow nuclear plants to exploit a far higher fraction of the energy contained in uranium ore, potentially expanding the lifetime of the world’s nuclear fuel resources from around 100 years up to 1,000 years.

The Advanced Fuel Cycle Initiative, with an investment of $70 million for FY 2006 (an increase of $2.5 million compared to FY 2005), will continue the progress made in the development of proliferation-resistant treatment and transmutation technologies that can reduce both the volume and toxicity of spent nuclear fuel. These technologies would support both national security and energy independence by reducing inventories of commercially-generated plutonium while recovering residual energy value from spent nuclear fuel. If successful, these same technologies offer benefits of enhancing national security by reducing inventories of commercially-generated plutonium and enhancing energy independence by recovering the energy value contained in spent nuclear fuel.

The program has already enjoyed considerable success. We have proven the ability of our URanium EXtraction (UREX) technology to separate uranium from spent fuel at a very high level of purity. We have demonstrated the ability of a derivative technology, UREX+, to separate a combined mixture of plutonium and neptunium that can serve as the basis for a proliferation-resistant fuel for light water reactors. While the UREX+ process has great potential to address the spent fuel challenges associated with today's light water reactors, we have also been investigating an alternative separation technology called pyroprocessing. This technology is a highly efficient, proliferation-resistant non-aqueous approach to separate the actinides in spent fuel from fission products. Among other potential applications, pyroprocessing could support the reduction of the radiotoxicity of nuclear waste through the transmutation of minor actinides in future Generation IV fast spectrum reactors providing the means for closure of the fuel cycle for Generation IV fast reactors.

For the Advanced Fuel Cycle Initiative to be successful, advanced fuel treatment and transmutation research and development must be integrated with the development of Generation IV nuclear energy systems, particularly with those reactor technologies that can produce the high energy neutrons needed to transmute a wide variety of toxic radioactive species. We have organized our national labs, universities, and international collaborations in a manner that will enable the success of the Advanced Fuel Cycle Initiative.

FISCAL YEAR 2006 BUDGET REQUEST

UNIVERSITY REACTOR INFRASTRUCTURE AND EDUCATION ASSISTANCE

In addition, the Department has paid close attention to developments impacting university research reactors. The research conducted using these facilities is critical to many national priorities. Currently, there are 27 operating university research reactors at 26 campuses in 20 states. These reactors are providing support for research in such diverse areas as medical isotopes, human health, life sciences, environmental protection, advanced materials, lasers, energy conversion and food irradiation.

The most exciting development in University Reactor Infrastructure and Education Assistance is the Innovations in Nuclear Infrastructure and Education (INIE) Program established in FY 2002. The consortia have demonstrated remarkable collaborative

efforts and strong formation of strategic partnerships between universities, national laboratories, and industry. These partnerships have resulted in increased use of the university nuclear reactor research and training facilities, upgrading of facilities, increased support for students, and additional research opportunities for students, faculty and other interested researchers. Today, the Department funds six INIE consortia, providing support to 32 universities in 23 states across the Nation.

To complement INIE and the other university assistance programs, the University Reactor Infrastructure and Education Assistance program provides assistance to universities to improve the operational and experimental capabilities of their research reactors and provides for the fabrication and shipment of fresh fuel to their research reactors.

Grants are provided to universities to purchase equipment and services necessary to upgrade the reactor facilities, such as reactor instrumentation and control equipment, data recording devices, radiation, security and air monitoring equipment, and gamma spectroscopy hardware and software. Each year, as many as 25 universities request and receive this assistance. The Reactor Sharing program enables universities with reactors to "share" access to their facilities with students and faculty at their own institutions, with universities that lack such a facility, and with visiting students from other local institutions including high schools and middle schools. The reactors are made available for use in research, experiments, material irradiations, neutron activation analysis and training, and for facility tours and other educational activities.

The growth of nuclear energy in the United States is dependent on the preservation of the education and training infrastructure at universities. The Department has played a substantial role in reversing the decline in undergraduate enrollments in this area of study. In 1998, the United States saw only around 450 students enroll as nuclear engineers—down from almost 1,500 in 1992. After several years of focused effort, the United States now has nearly 1,600 students studying nuclear engineering. That number is set to increase further, as strong programs—such as at Purdue and Texas A&M—continue to grow and we see new programs start at schools such as South Carolina State University, the University of South Carolina, and the University of Nevada-Las Vegas. Given the very large number of retirements expected in the nuclear field over the next five to ten years, industry, government, and academia find that this upswing in student interest comes at a critical time.

The Department provides tuition, stipends, and a practicum to outstanding graduate students studying nuclear engineering and health physics and scholarships and a practicum to undergraduate students pursuing a nuclear engineering course of study. This highly competitive program has produced outstanding graduates who have become leaders in nuclear research and university education. Also, within the fellowships and scholarships program is the University Partnership program, which encourages students enrolled at minority-serving institutions to pursue a nuclear engineering degree at universities with nuclear engineering programs. There are currently six university partnerships consisting of 13 institutions working cooperatively in this innovative

program. South Carolina State University (SCSU) and the University of Wisconsin were involved in the pilot program and now SCSU administers the program for all university partnership members. SCSU has also added two nuclear engineering faculty members and has become the only historically black college or university in the United States with an accredited nuclear engineering program.

We continue our small but important effort to provide scholarships and graduate fellowships to students studying the vital and too-often overlooked discipline of health physics. The Department is concerned that the Nation may soon not have the trained health physicists who are needed to assure the safety of vital nuclear and radiological activities. This program will help heighten the visibility of health physics as a viable career opportunity and strengthen the health physics pipeline to replace retiring professionals.

The Nuclear Engineering Education Support program prepares students for nuclear engineering and science careers and assists universities with special needs to improve their educational infrastructure. This program is helping to address the knowledge gap of incoming college freshmen in the area of nuclear science and engineering. In FY 2005 a nuclear science and technology education pilot was established between the Department and the Pittsburgh Public School System to provide advanced placement high school science students an intensive educational experience in the field of nuclear science and technology. This effort provides course materials, tours to nuclear facilities, and lectures from internationally-recognized experts. In FY 2006, the program will expand its efforts to enlist local organizations in sponsoring the model used in the Pittsburgh pilot program to other school systems across the country, thereby strengthening the understanding of nuclear science in our public schools.

The President's Budget supports continuation of the University Reactor Infrastructure and Education Assistance Program in FY 2006 with a request of $24 million (an increase $190K compared to FY 2005).

FISCAL YEAR 2006 BUDGET REQUEST

RADIOLOGICAL FACILITIES MANAGEMENT

In addition to nuclear research and development programs, we have the responsibility to maintain and enhance the nation's nuclear science and technology infrastructure. This budget request also includes $64.8 million (a decrease of $3.7 million compared to FY 2005) to fund the management of the Department's vital resources and capabilities at Oak Ridge National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory, and Brookhaven National Laboratory in a safe, secure, and cost effective manner to support national priorities. The mission of the Radiological Facilities Management program is to maintain these critical user facilities in a safe, environmentally-compliant and cost-effective manner to support national priorities. These funds assure that NE facilities meet essential safety and environmental requirements and are maintained at user-ready levels. Actual operations, production,

research, or other additional activities are funded either by other DOE programs, by the private sector, or by other Federal agency users.

The Department is responsible for maintaining the necessary nuclear material and infrastructure that is required to deliver plutonium-238-fueled radioisotope power systems (using plutonium-238) to various Federal users. These systems are an irreplaceable enabling technology for deep space exploration missions and national security missions. As part of the Department's emphasis on consolidating nuclear material, increasing nuclear security, reducing nuclear risks, and addressing secure transportation issues, we are currently performing an environmental review to assess the consolidation of all of our plutonium-238 operations. DOE has identified consolidation at the Idaho National Laboratory as the preferred alternative for this proposed action.

In addition, the Radiological Facilities Management program assures appropriate oversight of the operations and maintenance of the Department's Paducah Gaseous Diffusion Plant uranium enrichment facilities to assure that USEC Inc. meets its commitments under the 2002 DOE-USEC Agreement and that the Government's rights and options are being preserved.

The FY 2006 $64.8 million budget request includes $18.7 million to prepare the final design, procure equipment, and begin facility modifications for the Uranium-233 Disposition Project at Oak Ridge National Laboratory. This project is aimed at stabilizing materials left over from the Cold War to address a Defense Nuclear Facilities Safety Board recommendation, while extracting isotopes from the uranium that are needed for very promising medical research.

FISCAL YEAR 2006 BUDGET REQUEST

IDAHO FACILITIES MANAGEMENT AND IDAHO SITEWIDE SAFEGURDS AND SECURITY

The Idaho Facilities Management program maintains the Department's facilities at Idaho in a safe, secure and environmentally compliant condition for a range of vital Federal missions. The Idaho Site-wide Safeguards and Security program supports activities that are required to protect the Department's Idaho complex assets from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which may cause unacceptable adverse impacts on national security, program continuity, the health and safety of employees, the public, or the environment.

We have now established the Idaho National Laboratory (INL), which combines the resources of the former Idaho National Engineering and Environmental Laboratory (INEEL) and the former Argonne National Laboratory-West (ANL-W). This new lab began operations on February 1, 2005, and will lead much of the Department's exploration into advanced nuclear reactor and fuel cycle technology. We have set an aggressive goal for the new INL to become the world's premier center for nuclear energy research and education within a decade.

Developing a central research laboratory is a major step forward for the nuclear energy program. We have now joined the other key energy programs at the Department by having a central, dedicated research site at which we can centralize our infrastructure investments and build the expertise needed to accomplish our program goals. A central lab also helps us minimize the shipment of nuclear materials across the country and allows us to bring our nuclear materials together in a single, secure location. In addition, we expect that our new central, dedicated research laboratory will become a major player in the education of the next generation of nuclear energy technologists that this Nation will need to assure our energy security in the future.

Our funding request of $80.1 million from Energy Supply and $17.8 million from Other Defense Activities for the Idaho Facilities Management program maintains and operates the Department's facilities at Idaho in a safe, reliable, and environmentally compliant condition for a range of vital Federal missions. The overall funding for the Idaho Facilities Management program decreases from FY 2005 to FY 2006 because of a $43.4 million one-time cost associated with restructuring the INL complex and supporting site infrastructure services. This decrease is offset by an increase of $19.7 million for maintenance and recapitalization projects to support the goal of achieving and maintaining an expenditure rate of two to four percent of Replacement Plant Value, a level recommended by the National Academy of Sciences and incorporated in Departmental guidance, for the facilities at INL. One of the essential facilities for ongoing and planned national security and energy research programs at the INL is the Advanced Test Reactor (ATR). Replacing the ATR with a new test reactor with similar capabilities would exceed two billion dollars and likely take at least ten years to build. An independent review group of reactor experts studied the ATR and provided their perspectives on the life extension of the reactor. This review prompted several projects, most notably an exhaustive safety basis reconstitution to assure that all safety related systems meet modern standards. This project is in progress and results to date are favorable.

The recommendations of this review and other analyses will be incorporated into the INL Ten Year Site Plan (TYSP), which is the foundation for INL facilities and infrastructure strategic planning and the cornerstone of the Program's initiative to restore the INL and the other essential facilities on the site. The TYSP provides recommendations for short- and long-term recapitalization of existing mission essential facilities and infrastructure. The TYSP identifies and prioritizes the project, activities, and mission resource requirements for real property assets that cover a ten-year planning horizon as well as includes a prioritized list of maintenance, repair, and recapitalization projects necessary to correct the maintenance backlog.

Our budget request of $75 million (an increase of $17.3 million compared to FY 2005) from the Other Defense Activities appropriations account for the Idaho Sitewide Safeguards and Security program supports activities that are required to protect the Department's Idaho complex assets from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which may cause unacceptable

adverse impacts on national security, program continuity, the health and safety of employees, the public, or the environment. As a result of merging the former INEEL and ANL-W sites into the INL, the two existing safeguards and security programs at the Idaho site will be merged into a single program. This integration will continue in FY 2005 with additional changes anticipated to increase efficiency and contain costs for safeguards and security for the site.

The Department issued a revised Design Basis Threat in October 2004. These requirements will be implemented using a risk-informed approach to physical upgrades and by seeking efficiencies associated with combining the two contracts. The Department believes that early investment in improved positions for defending forces, more capable detection systems, and technological deterrent devices at target locations will result in cost avoidance over the lifetime of enduring facilities by reducing the number of additional protective force members needed to counter the revised threat. The FY 2006 request reflects increased funding of $17.3 million to permit these investments.

CONCLUSION

Our Nation cannot rely on any single energy technology to secure its future. A broadly diverse energy supply has served us well in the past and must be available for the future. Nuclear energy should be a part of that diverse portfolio as look to support our growing economy while limiting air emissions and enhancing America's energy independence.

The Department of Energy's goal is to work with the private sector, our overseas partners, and other agencies to assure that the benefits of nuclear technology continue to increase the security and quality of life for Americans—and other citizens of the world—now and into the future.

This concludes my prepared statement. Your leadership and guidance has been essential to the progress the program has achieved thus far and your support is needed as we engage the tasks ahead.

I would be pleased to answer any questions you may have.