2006

U.S. DEPARTMENT OF ENERGY

STRATEGIC PLAN

EXECUTIVE SUMMARY

ENERGY SECURITY

NUCLEAR SECURITY

SCIENTIFIC DISCOVERY AND INNOVATION

ENVIRONMENTAL RESPONSIBILITY

MANAGEMENT EXCELLENCE

MISSION

Discovering the solutions to power and secure America's future

U. S. DEPARTMENT OF ENERGY STRATEGIC PLAN

EXECUTIVE SUMMARY

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EDITORS NOTE:

This Executive Summary covers the Department of Energy including the National Nuclear Security Administration, the Energy Information Administration, and the Power Marketing Administrations. As an independent regulatory agency, the Federal Energy Regulatory Commission (FERC) prepares separate documents. See their web page at: http://www.ferc.gov/about/strat-docs.asp.

This document is also available on the Department of Energy's web site: http://www.energy.gov.

This Executive Summary was produced by the Office of Program Analysis and Evaluation in the Office of the Chief Financial Officer. The point of contact for this document is the Office of Program Analysis and Evaluation, which can be reached at (202) 586-1911 or at StrategicPlan@hq.doe.gov.

The Department of Energy Strategic Plan

Overview

The Department of Energy (DOE) has a rich and diverse history with its lineage tracing back to the Manhattan Project and the race to develop an atomic bomb during World War II. Following that war, Congress created the Atomic Energy Commission (1946) to take control over the scientific and industrial complex supporting the Manhattan Project and to maintain civilian government control over atomic research and development.

The Department of Energy Organization Act, which created DOE, was enacted in 1977 and DOE officially came into existence in October of that year. That law brought together for the first time, not only most of the government's energy programs, but also science and technology programs and defense responsibilities that included the design, construction, and testing of nuclear weapons. Over its history, DOE has shifted its emphasis and focus as the energy and security needs of the Nation have changed.

Today, DOE stands at the forefront of helping the Nation meet our energy, scientific, environmental, and national security goals. These include developing and deploying new energy technologies, reducing our dependence on foreign energy sources, protecting our nuclear weapons stockpile, and ensuring that America remains competitive in the global marketplace. To help achieve these goals, President Bush has launched two key initiatives: the American Competitiveness Initiative (ACI) and the Advanced Energy Initiative (AEI). The President launched these initiatives recognizing that science, technology, and engineering hold the answers to many of the critical challenges our world faces.

These new initiatives to spur scientific innovation and technology development expand DOE's continuing support for the competitive energy markets, both domestically and internationally, and of policies that facilitate continued private investment in the energy sector. In addition, DOE supports the demonstration and deployment of energy technologies through collaborative efforts with the private sector and public sector entities.

To help ensure that today's brightest students become tomorrow's scientific leaders, President Bush launched the ACI. This initiative increases investment in research and development, strengthens science and math education for America's youth, and encourages entrepreneurship and technology discovery. The goal of this initiative is to invest in our next generation of scientists, engineers, and educators so America can remain at the forefront of innovation and successfully compete in the 21st Century global marketplace.

AEI seeks to improve our energy security and reduce our dependence on foreign oil by changing the ways we power our cars, homes, and businesses. This goal can be achieved by accelerating the research, development, and deployment of clean energy technologies to diversify our Nation's energy mix. AEI directs funds for the advancement of renewable energy technologies such as biomass, wind, and solar energy and continuing investment in hydrogen research and development. Additionally, to tap the Nation's abundant coal reserves, AEI accelerates the development of clean coal technology including building a near-zero atmospheric emissions coal plant. Another component of AEI is the Global Nuclear Energy Partnership, a comprehensive nuclear energy strategy that will enable the expansion of nuclear energy (free of air emissions) worldwide in a clean, safe, and affordable manner.

As the steward of the Nation's nuclear weapons stockpile, DOE is responsible for maintaining nuclear deterrents and leading the international nuclear nonproliferation efforts in a world where terrorism is a real threat to national security and world stability. DOE is also responsible for the safe cleanup of the environmental legacy of the Nation's nuclear weapons program and government-sponsored nuclear energy research. This includes mitigating the risks and hazards associated with disposing of nuclear materials and deactivating and decommissioning facilities no longer needed to support the Department's mission. DOE strives to protect its workers and the public through promulgation and enforcement of nuclear safety and worker health and safety rules.

By implementing DOE's Strategic Plan, we are enhancing America's energy security and sustaining our economic vitality.

Mission

Discovering the solutions to power and secure America's future

Vision

The Department's vision is to achieve results in our lifetime ensuring: Energy Security; Nuclear Security; Science-Driven Technology Revolutions; and One Department of Energy—Keeping our Commitments.

Strategic Themes

The Department of Energy's Strategic Plan is designed to deliver results along five strategic themes

Theme 1: Energy Security
Promoting America's energy security through reliable, clean, and affordable energy

Theme 2: Nuclear Security
Ensuring America's nuclear security

Theme 3: Scientific Discovery and Innovation
Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology

Theme 4: Environmental Responsibility
Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production

Theme 5: Management Excellence
Enabling the mission through sound management

Within these themes there are sixteen strategic goals which are designed to help DOE successfully achieve its mission and vision.

Secretary's Message

Reliable and affordable energy is central to our economic and national security. Indeed, energy helps drive the U.S. and global economy and has a significant impact on our quality of life and the health of our people.

Rapid economic growth, especially in the developing world, is expected to increase world energy consumption by over 50 percent by 2025. The Department is focused on diversifying America's energy supply, improving our energy efficiency, addressing environmental and climate changes, and modernizing our energy infrastructure in order to meet the challenges we face.

The security of the Nation's nuclear weapons and materials has never been more important. There remains a real and ever emerging threat to America from terrorists and the proliferation of nuclear weapons in potentially vulnerable world regions.

This Department of Energy Strategic Plan is our roadmap to address the energy, environmental, and nuclear security challenges before us. The heart of our plan is founded on innovation through science-driven development of new technologies. In the pages that follow, we outline our commitment to energy security, diversity, and efficiency through the development of economically competitive fuels and technologies, including bold new initiatives in nuclear, coal, hydrogen, and renewables, such as, biomass, wind, and solar energy. Diversification of energy supply toward alternate sources can greatly relieve pressures on markets for conventional energy sources over time while helping to cope with growing environmental concerns. Our plan renews and extends our commitment to the environment, both resolving legacy nuclear waste and supporting a future of cleaner energy. And we remain steadfast in meeting our commitment to the national security interests of the United States through a reliable and responsive nuclear weapons stockpile and advancing the goal of global non-proliferation.

As we enhance our energy options and advance our national security interests, we place the highest importance on protecting the health and safety of our workers and the public.

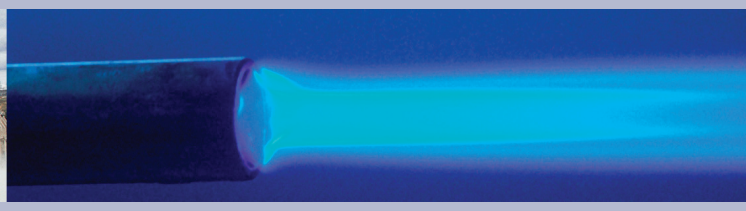
All of us at the Department of Energy are committed to making a difference in the lives of Americans.

Samuel W. Bodman

Samuel W. Bodman

STRATEGIC THEME 1 ENERGY SECURITY

Promoting America's energy security through reliable, clean, and affordable energy



ENERGY SECURITY CHALLENGES

The United States is heavily dependent upon oil, especially in the transportation sector. Rapid increases in U.S. and world energy demand, combined with regional resource and production constraints, have led to large increases in oil and natural gas prices, changing the industrial and commercial business environment. The Nation's energy infrastructure is not keeping pace with the growth in energy supply and demand, thereby endangering the reliability of the energy system. Finally, there is a need to reduce the environmental impacts associated with energy use.

ENERGY SECURITY STRATEGIC GOALS

GOAL 1.1 – ENERGY DIVERSITY

Increase our energy options and reduce dependence on oil, thereby reducing vulnerability to disruption and increasing the flexibility of the market to meet U.S. needs.

STRATEGIES TO REACH THIS GOAL

• Reduce dependence on energy imports, particularly oil in the transportation sector, by developing and effectively deploying technologies to increase fuel efficiency and enable the substitution of alternatives such as biofuels, electricity, and hydrogen.

• Collaborate globally with governments and scientists to expedite the development and deployment of unconventional energy resources, such as biofuels, that can substitute for oil and natural gas.

• Collaborate globally with governments and scientists to expedite the development and deployment of nuclear power which can substitute for natural gas.

• Ensure adequate crude and regional home heating oil supplies during emergency shortages by maintaining the operational readiness of the Strategic Petroleum Reserve and Northeast Home Heating Oil Reserve.

• Ensure an expanding supply of domestic energy for the American public by promoting the construction of an Alaska Natural Gas Pipeline and the environmentally responsible development of the Outer Continental Shelf and the Arctic National Wildlife Refuge.

GOAL 1.2 – ENVIRONMENTAL IMPACTS OF ENERGY

Improve the quality of the environment by reducing greenhouse gas emissions and environmental impacts to land, water, and air from energy production and use.

STRATEGIES TO REACH THIS GOAL

• Support the creation of new nuclear generation capacity to produce carbon-free electricity in the near term (2015); complete a permanent repository for nuclear waste at Yucca Mountain by 2017; and develop next-generation advanced reactor and fuel cycle technologies for deployment in the long term (2025) for both electricity and hydrogen production.

• Advance clean coal technology through public-private partnerships for continued electricity generation from the country's extensive coal resources, ultimately resulting in near-zero atmospheric emissions power plants.

• Support research and development efforts to reduce the costs of renewable energy technologies and accelerate the large-scale use of carbon-free electricity sources.

• Develop technologies to reduce vehicle emissions by improving efficiency and greatly expanding the use of clean fuels, while maintaining vehicle safety, performance, and cost characteristics.

• Work collaboratively with other Federal agencies, private industry, and other countries to accelerate the adoption of technologies capable of substantially reducing global emissions of greenhouse gases and other emissions.

GOAL 1.3 – ENERGY INFRASTRUCTURE

Create a more flexible, more reliable, and higher capacity U.S. energy infrastructure.

STRATEGIES TO REACH THIS GOAL

• Develop advanced wires and coils to increase the capacity, efficiency, and reliability of the electricity system.

• Advance real-time visualization and control tools to improve the reliability and efficiency of the Nation's electricity delivery system by increasing the utilization of transmission and distribution assets.

• Integrate advanced technologies, including distributed generation, storage, and load management on distribution utility feeders to improve the efficiency and reliability of constrained sections of the electricity grid.

• Provide technical assistance to State and regional officials on policies and emergency response options.

GOAL 1.4 – ENERGY PRODUCTIVITY

Cost-effectively improve the energy efficiency of the U.S. economy.

STRATEGIES TO REACH THIS GOAL

• Support enhancements to existing energy markets that will help stimulate private investment in more efficient and economically productive end-use technologies.

• Develop integrated building technologies and formulate appliance standards to significantly increase the energy efficiency of residential and commercial buildings.

• Partner with energy-intensive industries to develop technologies that enable more efficient use of energy in their industrial processes.

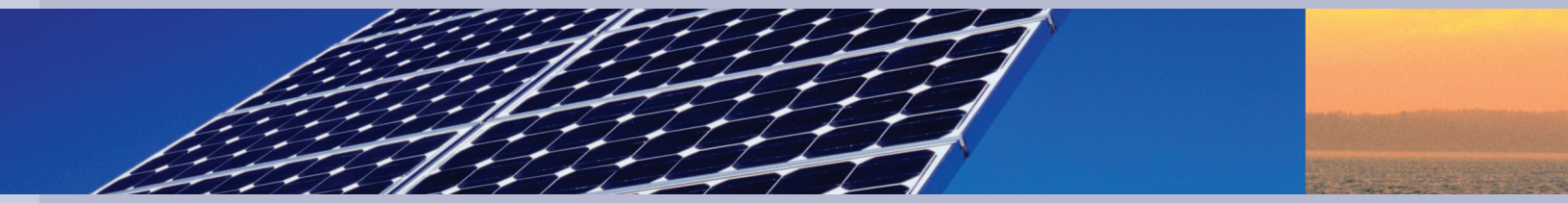
• Develop technologies that enable cars and trucks to be fuel efficient, while remaining cost and performance competitive.

• Promote increased energy efficiency and sustainable practices in Federal facilities.

RESULTS

STRATEGIC THEME 2 NUCLEAR SECURITY

Ensuring America's Nuclear Security



NUCLEAR SECURITY CHALLENGES

As NNSA continues to drawdown the nuclear weapons stockpile to the lowest levels since the Eisenhower Administration, we must consider the long-term effects of aging and the implications of successive warhead refurbishments which take us further away from the tested designs of the Cold War stockpile. The current nuclear weapons complex is not sufficiently responsive to fix technical problems in the stockpile or to react to potential adverse geopolitical change. Therefore, the nuclear weapons stockpile and the supporting infrastructure must be transformed. The Department is working closely with the Department of Defense to transform the nuclear deterrent to ensure that it can meet the changing technical, geopolitical, and military needs of the future. A second challenge deals with the ever increasing threat of terrorism. The mere acquisition by terrorists or rogue regimes of nuclear and radiological materials which could be used in weapons of mass destruction or in a "dirty bomb" represents a threat to the United States and to international peace and security. Lastly, increasing national security demands necessitate the development of next-generation naval nuclear propulsion technology.

NUCLEAR SECURITY STRATEGIC GOALS

GOAL 2.1 – NUCLEAR DETERRENT

Transform the Nation's nuclear weapons stockpile and supporting infrastructure to be more responsive to the threats of the 21st Century.

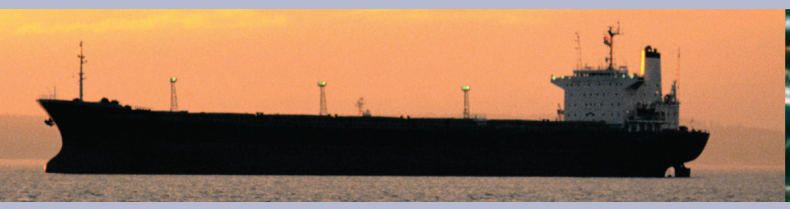
STRATEGIES TO REACH THIS GOAL

• In partnership with the Department of Defense, transform the nuclear weapons stockpile by: developing Reliable Replacement Warheads that are safer, more secure, and easier to manufacture and maintain; refurbishing a limited number of legacy-design warheads and ensuring their vitality until they are replaced; and accelerating dismantlement of the Cold War stockpile.

• Transform the current nuclear weapons complex into a modernized, cost-effective complex by: reducing the number of sites, and facilities within sites, that possess large quantities of special nuclear materials; consolidating redundant capabilities; operating science assets as shared user facilities; and designing, building, and operating new facilities in a manner that protects public and worker health and safety and the environment.

• Create a fully integrated and interdependent complex by: implementing uniform and streamlined business practices and processes; using the operating contracts for each site to facilitate the integration and interdependence of the complex; and applying risk-informed decision-making to integrate safety, security, and mission work.

• Drive the science and technology base essential for long-term national security forward by: integrating activities with DOE's Office of Science and other national sponsors; enhancing the Work for Others program; and managing capabilities based on "return on investment" for improving DOE's ability to certify the stockpile.



GOAL 2.2 – WEAPONS OF MASS DESTRUCTION

Prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction and in other acts of terrorism.

STRATEGIES TO REACH THIS GOAL

• Provide technical and policy leadership to the U.S. Government and international community and pursue collaborative efforts with other countries and international organizations to achieve nonproliferation objectives.

• Develop the technologies and expertise to detect the proliferation of nuclear materials.

• Promote next-generation technologies that minimize proliferation risks.

• Provide technical and other appropriate assistance to secure nuclear weapons, special nuclear material, and radiological materials around the world.

• Provide technical and other appropriate assistance to terminate Russian production of plutonium and eliminate surplus fissile materials.

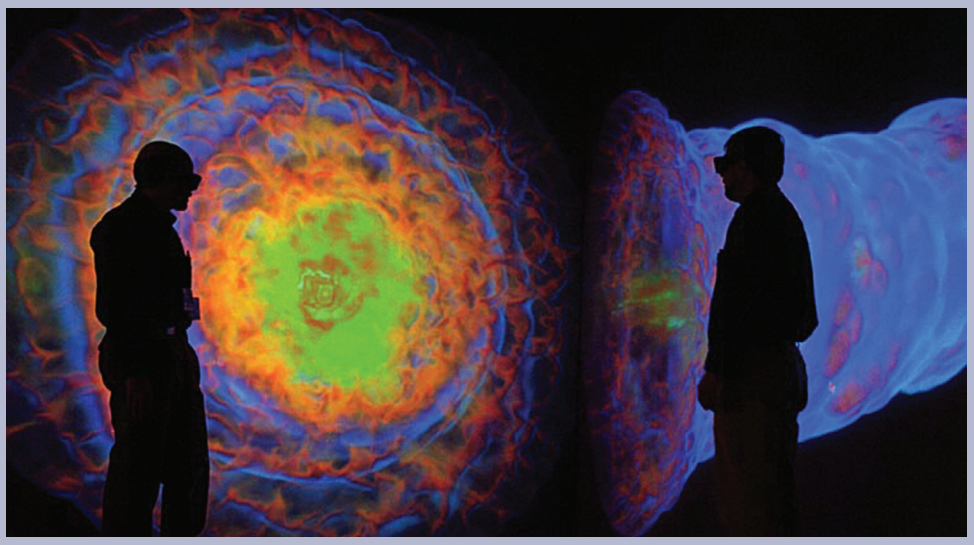
GOAL 2.3 – NUCLEAR PROPULSION PLANTS

Provide safe, militarily effective nuclear propulsion plants to the U.S. Navy.

STRATEGIES TO REACH THIS GOAL

• Provide operational support and ensure the safety, performance, reliability, and service life for 104 operating reactor plants.

• Develop new technologies, methods, and materials to support reactor plant design for future generations of reactors for submarines and aircraft carriers.



RESULTS

STRATEGIC THEME 3 SCIENTIFIC DISCOVERY AND INNOVATION

Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology

SCIENTIFIC DISCOVERY AND INNOVATION CHALLENGES

The U.S. must remain vigilant as other nations invest heavily in science and technology in an attempt to match our economic productivity and compete with U.S. industry. America's investment in the physical sciences, which many consider to be the cornerstone of the Nation's scientific enterprise, must be strengthened to capture the promise of emerging scientific disciplines that will define the technological progress over the next 100 years. The Nation's incremental changes in technology are not sufficient to maintain the world leadership in industry and academia. The scale and complexity of science and global challenges require multidisciplinary and multinational responses. The Nation's scientific workforce and science literacy must be grown to prepare citizens to compete for jobs and increase overall economic productivity.

SCIENTIFIC DISCOVERY AND INNOVATION STRATEGIC GOALS

GOAL 3.1 – SCIENTIFIC BREAKTHROUGHS

Achieve the major scientific discoveries that will drive U.S. competitiveness, inspire America, and revolutionize approaches to the Nation's energy, national security, and environmental quality challenges.

STRATEGIES TO REACH THIS GOAL

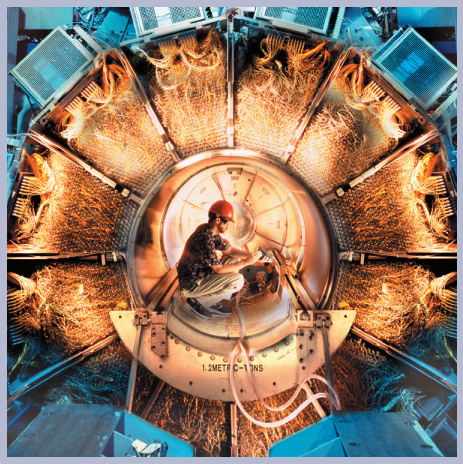
• Advance the basic energy sciences to realize transformational discoveries built on the foundations of basic research in materials sciences, chemical sciences, related scientific disciplines and tools, and major scientific user facilities for creating atomic-scale structures.

• Expand efforts in biological and environmental research, including genomic and related biological sciences by: creating fundamentally new energy sources and conversion processes; improving climate and earth system modeling; and understanding prediction and control of environmental contaminant fate and transport.

• Increase research to advance the knowledge of plasma and fusion energy sciences to the point where a determination of commercial feasibility of one or more leading designs is possible.

• Advance the computational sciences and the leadership-class computational capabilities required for today's frontiers of scientific discovery.

• Advance fundamental knowledge in high energy physics and nuclear physics that will result in a deeper understanding of matter, energy, space, and time.



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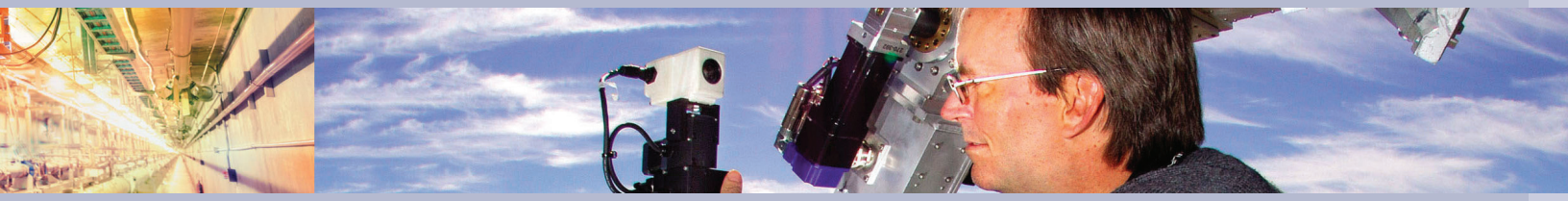


GOAL 3.2 – FOUNDATIONS OF SCIENCE

Deliver the scientific facilities, train the next generation of scientists and engineers, and provide the laboratory capabilities and infrastructure required for U.S. scientific primacy.

STRATEGIES TO REACH THIS GOAL

• Complete construction and begin operation of major scientific user facilities.

• Improve the operations of the National Laboratory system using a collaborative approach.

• Increase the operating efficiency and safety of the National Laboratories and scientific user facilities, guided by a ten-year site planning process.

• Develop an approach by working with other Federal agencies to recruit the next generation of leaders in science, technology, and engineering.

• Better communicate the importance of science and technology to inspire participation in the innovation economy.

GOAL 3.3 – RESEARCH INTEGRATION

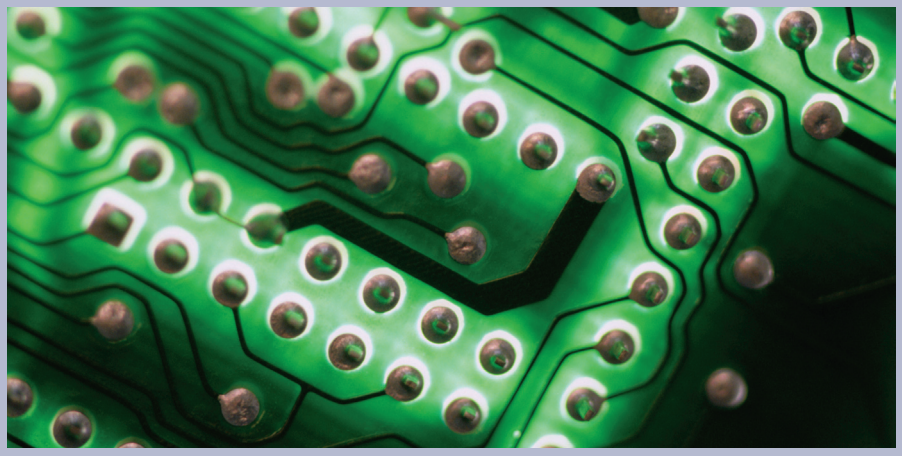
Integrate basic and applied research to accelerate innovation and to create transformational solutions for energy and other U.S. needs.

STRATEGIES TO REACH THIS GOAL

• Strengthen the ties between the basic research and applied mission programs in Departmental planning.

• Ensure continuous cooperation and information flow between basic and applied research efforts through integrated research management and initiatives.

• Develop strategic partnerships with other Federal research agencies and the public and private sectors to leverage the combined intellectual capital and science resources to solve the Nation's challenges in energy, environment, and national security.



RESULTS

STRATEGIC THEME 4 ENVIRONMENTAL RESPONSIBILITY

Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production

ENVIRONMENTAL RESPONSIBILITY CHALLENGES

Cleanup of the nuclear weapon's legacy is an enormously complex undertaking involving significant challenges. DOE is also faced with Federal, State, and local regulatory policies that create challenges. The Department's effort to construct a repository for the final disposal of spent nuclear fuel and high level radioactive waste continues to meet regulatory challenges. Finally, despite aggressive environmental cleanup efforts, the Department must be prepared to address residual risks that will remain for significant periods of time at most DOE sites.

ENVIRONMENTAL RESPONSIBILITY STRATEGIC GOALS

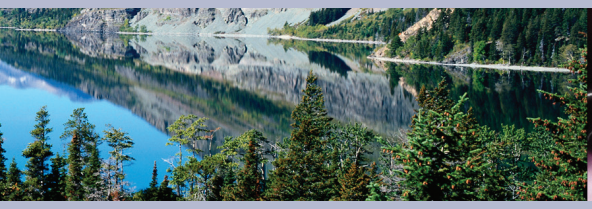
GOAL 4.1 – ENVIRONMENTAL CLEANUP

Complete cleanup of the contaminated nuclear weapons manufacturing and testing sites across the United States.

STRATEGIES TO REACH THIS GOAL

- Identify and eliminate the most serious risks to worker safety, human health, and the environment.
- Ensure safe and secure management of nuclear materials and radioactive wastes and enable final disposition of these materials in a geologic repository.
- Reduce the facility infrastructure footprint to maximize resources for environmental cleanup.
- Leverage science and technology to directly address the specific, applied needs for cleanup and closure.
- Utilize project management best practices to improve implementation and performance of clean-up work.

ACHIEVING



GOAL 4.2 – MANAGING THE LEGACY

Manage the Department's post-closure environmental responsibilities and ensure the future protection of human health and the environment.

STRATEGIES TO REACH THIS GOAL

• Protect human health and the environment through surveillance and maintenance activities that verify workable environmental remedies.

• Preserve, protect, and ensure accessibility of legacy records and information associated with current and historical site and facility operations.

• Optimally re-use lands ensuring that human health and the environment are protected and that regulators and the community are involved.

• Use environmental conflict resolution techniques to assist in the resolution or prevention of disputes.

• Implement the Nuclear Waste Policy Act by completing the construction of a repository for the final disposal of spent nuclear fuel and high-level radioactive waste.

RESULTS

STRATEGIC THEME 5 MANAGEMENT EXCELLENCE

Enabling the mission through sound management

MANAGEMENT EXCELLENCE CHALLENGES

DOE is an organization of diverse programs. While this structure has its advantages, it often hampers integrated management of core functions across the Department. In addition, there are economies of scale and improvements in service that could be attained by implementing a common Department-wide approach to core services utilized by all internal stakeholders. This can be difficult to attain in a program-centered approach to the work. However, DOE also faces near-term challenges that are more fundamental. A significant portion of the Department's budget is awarded to contractors each year and achieving excellence in the Department's management of contracts remains a significant challenge. The average age of the workforce is increasing and the number of skilled employees eligible for retirement suggests an impending knowledge and capability gap in the next three-to-seven years. The Department is implementing a new resource management system that ties together data from various functional disciplines into a single enterprise-wide network. The implementation of this system combined with recent audit challenges requires the Department to adopt new financial and business practices. The Department currently faces accrued under-funded contractor pension plan and post-retirement benefits liability in the billions of dollars. Finally, DOE's infrastructure is aging, which creates both safety and security concerns.

MANAGEMENT EXCELLENCE STRATEGIC GOALS

GOAL 5.1 – INTEGRATED MANAGEMENT

Institute an integrated business management approach throughout DOE with clear roles and responsibilities and accountability to include effective line management oversight by both Federal and contractor organizations.

STRATEGIES TO REACH THIS GOAL

• Design and implement a functional accountability model that supports an integrated management approach.

• Develop and implement clear, consistent, enterprise-wide performance goals and measures to better inform decision-makers and ensure accountability for integrated management.

• Develop and implement customer service standards across programs and Departmental elements focused on meeting the cost, quality, and timeliness standards of the Department's customers.

• Develop and implement a strategy to improve the Department's management of contracts and major capital acquisition projects.

GOAL 5.2 – HUMAN CAPITAL

Ensure that DOE's workforce is capable of meeting the challenges of the 21st Century by attracting, motivating, and retaining a highly skilled and diverse workforce to do the best job.

STRATEGIES TO REACH THIS GOAL

• Implement programs and processes that will enable the Department to quickly recruit, develop, and retain a qualified, diverse workforce through an integrated workforce planning system.

• Create a Department-wide performance culture focused on individual and organizational accountability toward the achievement of DOE's programmatic goals and priorities.

ACHIEVING

GOAL 5.3 – INFRASTRUCTURE

Build, modernize, and maintain facilities and infrastructure to achieve mission goals and ensure a safe and secure workplace.

STRATEGIES TO REACH THIS GOAL

• Invest in the infrastructure to reduce overall facility square footage and improve energy efficiency and sustainability.

• Implement an active asset management plan to align resource needs with key Departmental goals.

• Improve the information technology infrastructure through upgraded networks and technology and strengthened cyber security.

• Integrate safety and security into every element of the Department's mission to safeguard employees and assets.

GOAL 5.4 – RESOURCES

Institutionalize a fully integrated resource management strategy that supports mission needs and postures the Department for continuous business process improvement.

STRATEGIES TO REACH THIS GOAL

• Conduct meaningful analysis that supports timely decision-making based on financial, operational, and programmatic information.

• Develop and implement standard, enterprise-wide financial and business practices.

RESULTS

2006

OPERATING PRINCIPLES

Ensure safe, secure, and environmentally responsible operations

Act with a sense of urgency

Work together

Treat people with dignity and respect

Make the tough choices

Keep our commitments

Embrace innovation

Always tell the truth

Do the right thing

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