Fiscal Year 2011
Annual Performance Report

DOE/CF-0069

U.S. DEPARTMENT OF ENERGY

CONTENTS

MESSAGE FROM THE SECRETARY

I am pleased to present the U.S. Department of Energy's (DOE) *Fiscal Year 2011 Annual Performance Report*. This report provides key performance information that demonstrates our accountability to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. This report and our *Fiscal Year 2011 Agency Financial Report*, released in November 2011, are produced as an alternative to the Performance and Accountability Report. These reports are available at Energy.gov.

The Department of Energy has made remarkable progress during these economically challenging times by laying the foundation for a new clean energy future, advancing groundbreaking science, and reducing the nuclear dangers facing our citizens. In the process, we have begun to change the way the Department does business so we accomplish our work more efficiently and more effectively. The Department of Energy Strategic Plan, released in May 2011, reflects this new focus through four strategic goal areas: *transform our energy systems* through catalyzing the timely, material, and efficient transformation of the nation's energy system and securing U.S. leadership in clean energy technologies; *promote the science and engineering enterprise* by maintaining a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity, with clear leadership in strategic areas; *secure our nation* by enhancing nuclear security through defense, nonproliferation, and environmental efforts; and establish *management and operational excellence* by establishing an operational and adaptable framework that combines the best wisdom of all Department stakeholders to maximize mission success.

The investments DOE has made have laid the foundation for a new clean energy economy – creating jobs, reducing our dependence on foreign energy sources, and saving money for American families and businesses. Investments in advanced vehicle manufacturing, renewable energy generation, the weatherization of low-income homes, smart meter deployment, and carbon capture and sequestration have benefited communities across the country, at the same time that they have increased the nation's economic competitiveness.

The Department continues to expand the frontiers of science to spur innovation and position the United States to lead in the global clean energy economy. The Advanced Research Projects Agency-Energy (ARPA-E) has established itself as a ground-breaking research agency to support potentially transformative research. DOE has also launched three Energy Innovation Hubs and dozens of Energy Frontier Research Centers to accelerate cutting-edge R&D. From a car battery with a 500-mile range to producing gasoline

from sunlight, we have unleashed bold new research efforts that – if successful – could fundamentally change the way we use and produce energy.

The Department of Energy has strengthened nuclear safety and security at home and abroad, cleaning up nuclear sites in the United States and securing vulnerable nuclear material around the world. The Department also played a central role in the historic Nuclear Security Summit, which brought together 47 world leaders to agree on effective national and international measures to secure nuclear material. DOE contributed to making the world a safer place by helping negotiate the New START Treaty – the most significant arms control agreement in nearly two decades.

As we continue our work, the Department will rely on the creativity, talent, and dedication of its employees to discover and deliver solutions to our national challenges. Together, we can position the United States to win the global clean energy technology race – creating new jobs and industries and a stronger economic future.

Based on our internal evaluations, I can provide reasonable assurance that the performance information contained in this report is complete and reliable and accurately describes the results achieved by the Department.

As Secretary, I assure you that Department of Energy employees take their work seriously, and I commend them for their contributions.

Steven Chu
February 2012

INTRODUCTION

This year's Department of Energy *Annual Performance Report* (*APR*) presents the performance results for fiscal year 2011 that have contributed to the achievement of goals identified in the President's fiscal year 2011 budget. The performance measures discussed in this report were initially outlined in the Department's FY 2011 Congressional Budget Request. After final congressional budget negotiations, some performance targets were revised to reflect changes in funding levels in enacted appropriations.

This document is one of two integrated reports that fulfill the annual financial and performance accountability reporting required by the Office of Management and Budget's Circular A-136 (*Financial Reporting Requirements*) and Circular A-11 (annual budget preparation guidance), the Government Performance and Results Act of 1993, and the GPRA Modernization Act of 2010:

- ***Agency Financial Report*** (*AFR*) – contains consolidated and combined financial statements, auditor's report, Inspector General's management challenges, improper payments information, and management discussion and analysis. The management section includes an analysis of the financial statements, management controls and compliance information, as well as a high-level discussion of performance outcomes as related to DOE's strategic goals.

- ***Annual Performance Report*** (*APR*) – provides summary and detailed results associated with the Department's performance goals and associated annual targets that align with the budget activities. Also included are references to supporting documentation and the status of prior-year unmet measures.

These reports are accessible through the DOE website:
www.energy.gov/about-us/budget-performance

PERFORMANCE BACKGROUND

Performance Framework

The Department uses a performance framework approach in developing program performance metrics to ensure that the right data are measured and to inform program managers, senior leaders, and stakeholders on the progress being made toward the Department's strategic goals. This framework consists of a hierarchical relationship from the Department mission to individual performance standards, as follows:

- The **Mission** of the U.S. Department of Energy is "*To ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions"*
- To accomplish the mission, the Department focuses on four **Strategic Goals**: 1. Transform Our Energy Systems; 2. The Science and Engineering Enterprise; 3. Secure Our Nation; and 4. Management and Operational Excellence
- The Department has established seven **Priority Goals** which represent the top priorities for the agency and the current administration and align with the strategic goals
- Each program area within the Department has clearly defined **Program Goals** that also align with the strategic goals and objectives
- Annual program **Performance Measures** and associated output and outcome targets support achievement of the program goals
- Individual employee and contractor **Performance Standards** are linked directly to specific performance measures to ensure that individuals are held accountable for achieving results

Priority Goals

The Department of Energy established seven priority goals in FY 2010 which are intended to focus senior leadership's attention on top administration and departmental priorities and promote better coordination across agencies on key performance priorities. These goals are measurable commitments to specific results the federal government will deliver for the American people. DOE goals are as follows:

- **Retrofits** – DOE and HUD will work together to enable the cost-effective energy retrofits of a total of 1.1 million housing units by the end of FY 2013 (of this number, DOE programs will contribute to retrofits of an estimated 1 million housing units)

- **Legacy Waste** – Reduce the Department's Cold War legacy environmental footprint by 40% by 2011

- **Renewable Capacity** – Double renewable energy generation (excluding conventional hydropower and biopower) by 2012

- **Advanced Battery Manufacturing** – Assist in the development and deployment of advanced battery manufacturing capacity to support 500,000 plug-in hybrid electric vehicles per year by 2015

- **Nuclear Loans** – Commit (conditionally) to loan guarantees for two nuclear power facilities to add new low-carbon emission capacity of at least 3,800 megawatts during 2010

- **Secure Nuclear Materials** – Make significant progress toward securing the most vulnerable nuclear materials worldwide within 4 years

- **Nuclear Weapons** – Maintain the U.S. nuclear weapons stockpile and dismantle excess nuclear weapons to meet national nuclear security requirements as assigned by the President through the Nuclear Posture Review

Performance Validation and Verification

Validation and verification of performance data support the general accuracy and reliability of performance information, reduce the risk of inaccurate performance data, and provide a sufficient level of confidence that the information presented is credible. Internal controls are used by the Department to meet these requirements, as follows:

- **Reviews/Audits**: The program offices, the national laboratories, and the Department's contractor work force maintain source data substantiating performance results. The Department internally reviews these performance data and results, while independent auditors evaluate key internal controls related to performance reporting.

- **Budget Preparation Analysis**: Performance targets submitted during each phase of budget development are reviewed to ensure that they contribute effectively to the achievement of program goals and are aligned with the Department's strategic priorities.

- **Training**: The Department offers training to employees to assist them in formulating quality performance measures that meet internal control standards.

- **Performance Measure Manager System**: The Performance Measure Manager (PMM) is a performance-management database that aligns the Department's Strategic Plan with program performance goals and targets. Departmental program and staff offices input performance measures and results directly into this database on a quarterly and annual basis. Detailed tables are then produced for the "Performance Results" section of this report.

PROGRAM EVALUATION

The general purpose of program assessments and reviews are to evaluate each program's quality and effectiveness, to support program planning and improvement, and to encourage programs to develop directions and manage in ways that reflect the Department's strategic goals. The Department's current program evaluation structure does not dedicate direct funding for agency-directed evaluation activities. The program offices within the Department determine their own staffing and allocate funding resources to planning and conducting evaluations. They allocate time, funding, and personnel to conduct regular and systematic program assessment. The program evaluations assess challenges, strengths, weaknesses, and progress in achieving program goals.

The Department program offices are responsible for planning and implementation of program evaluations. These offices develop key research questions and select the appropriate methodologies for each study. Components of the program are periodically reviewed by independent experts knowledgeable about the program and who have competence in the evaluation process and the results are used for continuing program development. The program assessment process is structured to measure the goals and standards of the program; instruments used are valid and reliable for their intended purpose. Program offices planning and conducting the assessment activities have expertise in various forms of program evaluations. These include peer and merit reviews, advisory committee reviews, studies by the National Academy of Sciences, and audits by the Government Accountability Office and the Inspector General.

The following are examples of current DOE program evaluation efforts (EERE, NNSA, Science, and IG web sites are accessible under the "Program Evaluation" section at www.energy.gov/about-us/budget-performance):

Office of Energy Efficiency and Renewable Energy (EERE)
The lead federal evaluator in EERE's Planning, Budget, and Analysis office and the EERE Chief Technology Officer frequently conduct programs' peer reviews. They also review draft impact evaluation plans and study reports. Impact evaluation studies are all conducted by independent, third-party professional evaluators, and their evaluation plans and study reports are reviewed by additional external experts, per requirements set by EERE standard operating procedures.

Office of Fossil Energy (FE)
The FE/National Energy Technology Lab (NETL) conducts peer review meetings with independent, technical experts to assess ongoing research projects and, where applicable, to make recommendations for improvement. The peer review panel of recognized technical experts provides recommendations on how to improve the performance, management, and overall results for each individual research project. For example, the American Society of Mechanical Engineers assembled a panel of leading government, academic, and industry experts to conduct a review of selected Advanced Gasification research projects supported by NETL.

Office of Nuclear Energy (NE)
The NE headquarters' organizations regularly assess the adequacy and the effectiveness of oversight processes carried out by the DOE Idaho Operations Office (DOE-Idaho). This is accomplished by NE headquarters participation in planned DOE-Idaho oversight activities, DOE-Idaho self-assessments, and independent assessments conducted by NE headquarters' personnel on the adequacy of the scope and conduct of the oversight activities performed by DOE-Idaho.

NE and DOE-Idaho have a significant number of subject matter experts available to conduct evaluations in a number of functional areas. Also, contract mechanisms are in place to obtain the services of independent experts when internal resources are inadequate. Policies, plans, and formal management, tracking, and archiving systems are in place to ensure all evaluations conducted by NE and DOE-Idaho are properly documented and available for lessons learned and auditing purposes. NE maintains the Oversight Proficiency Assurance Program to ensure that the NE staff conducting evaluations have the minimum baseline set of knowledge, skills, abilities, and experience necessary to conduct effective oversight/evaluations. DOE-Idaho evaluators maintain required oversight proficiency through participation in the Federal Technical Capability Program.

Office of Electricity Delivery and Energy Reliability (OE)
The OE Research and Development program conducts periodic peer reviews. The peer reviews provide the principal investigators with an expert, unbiased assessment of strengths, weaknesses, and specific changes that would improve the project.

Office of Science (SC)
All SC research projects and facilities undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program and under a similar process for the laboratory programs and scientific user facilities. All new projects are selected through peer review and merit evaluation. While 10 CFR 605 governs financial assistance, the SC applies the same principles to national laboratory research reviews as well.

SC has established for each of the six SC programs a Federal Advisory Committee, governed by the Federal Advisory Committee Act (FACA) of 1972 (Public Law 92-463) and all applicable FACA amendments, federal regulations, and executive orders. The committees include experts from universities, national laboratories, and industries and provide valuable, independent advice to SC upper management regarding the scientific and technical issues that arise in the planning, management, and implementation of the research programs. The Director of the Office of Science charges the relevant Federal Advisory Committees to assemble subcommittees, called Committees of Visitors (COV), to assess a program's activities on a regular basis. Every SC program element must be reviewed by a COV at least once every 3 years. Each COV panel is composed of a group of recognized scientists and research program managers with broad expertise in the designated program areas. Panel members are familiar with DOE research programs; however, a significant fraction of the COV members do not receive DOE funding.

Office of Environmental Management (EM)
The National Academy of Sciences (NAS) is chartered to evaluate technology gaps and provide technical and strategic advice to support further development of EM technology. The NAS is also chartered to evaluate the scientific and technological bases for specific aspects of the EM program, including assessments of existing and proposed standards, criteria, and approaches for the management of radioactive waste; and proposed priorities for research and funding.

Rigorous External Technical Reviews enable EM to trend technical risk and implement technical risk reduction strategies. These reviews are independent and advisory to DOE (i.e., not the site or project contractor) that focus on technical scope and risk. The Environmental Management Advisory Board (EMAB) provides independent and external advice, information, and recommendations to the Assistant Secretary for EM on corporate issues relating to cleanup and risk reduction. EMAB may study and propose options, recommendations, contracts, acquisition strategies, public and worker health and safety, integration and disposition of waste, regulatory agreements, roles and authorities, risk based end-states activities and risk reduction, cost-benefit analyses, program performance and functionality, and science requirements and applications. Specifically, at the request of the Assistant Secretary or the Site Managers, the Board may provide advice and recommendations concerning the following EM site-specific issues: clean-up standards and environmental restoration, waste management and disposition, stabilization and disposition of non-stockpile nuclear materials, excess facilities, future land use and long-term stewardship, risk assessment and management, and clean-up science and technology activities. Independent Project Reviews are also conducted to provide reasonable assurance that a project's work activities can be accomplished within the stated cost, schedule, and scope.

Office of Legacy Management (LM)
The Office of Legacy Management conducts quarterly internal evaluations to measure its performance against targets developed when LM established itself as a high-performing organization. The targets are consistent with the Department's Strategic Plan and include performance measures identified in the LM strategic plan. LM also conducts independent evaluations of its program activities on a rotating basis. The focus, methodology, and external participation of each evaluation are dependent upon the activity. The outcome of these evaluations includes an overall assessment of the respective activity, identification of potential issues, and recommendations for future management.

National Nuclear Security Administration (NNSA)
To evaluate program performance, the NNSA conducts various internal and external reviews and audits. The NNSA programmatic activities are subject to continuing review by the Congress, the U.S. Government Accountability Office, the Department's Inspector General, the National Security Council, the Defense Nuclear Facilities Safety Board, the Department's Office of Engineering and Construction Management, the Department's Office of Health, Safety and Security, and various scientific groups. Each year, numerous external independent reviews are conducted for selected program and projects. Additionally, the NNSA Headquarters

senior management and field managers conduct frequent, in-depth reviews of cost, schedule, and scope to ensure projects are on-track and within budget.

Office of the Chief Financial Officer (CFO)/**Office of Risk Management**
The Office of Risk Management conducts program evaluations on issues raised in audit reports, including follow-up on implementation of recommendations, assessment of Department-wide impacts of audit findings, and assessment of trends and recurring issues and assessments and special projects directed by CFO management to inform financial management decisions. Current examples include reviews of the Department's pension liability and management, reviews of security costs at DOE sites and the extent of indirect funding for security costs, assessments of whether sites have highlighted appropriate management risks, assessments of whether DOE sites have identified adequate internal controls to mitigate identified risks, assessments of the sufficiency of testing for identified controls, and assessments of the sufficiency of corrective action plans.

Office of the Inspector General (IG)
The IG conducts performance inspections which focus on fact-finding and analysis regarding specified management issues/topics. The scope of each performance inspection is usually focused around a particular issue or topic. The IG also conducts special, expedited reviews involving high profile or sensitive matters, such as critical issues of immediate interest to Congress, the IG, and/or DOE senior management. The IG issues a host of reports identifying concrete opportunities to reform Department management: contract management; waste management; environment, safety and health stewardship; research and development; major facilities and project construction and operation; and human capital.

PERFORMANCE BY STRATEGIC GOAL

The following performance discussion is aligned with the Department's strategic goals as presented in the *DOE Strategic Plan* released in May 2011: Transform Our Energy Systems, The Science and Engineering Enterprise, Secure Our Nation, and Management and Operational Excellence. The results are based on the budget appropriations for the corresponding fiscal year. The following table displays the overall results from DOE program metrics for the past several years:

Program Goals/Measures	FY 2011[a]	FY 2010[b]	FY 2009[b]	FY 2008	FY 2007
Targets Met	165	273	285	203	189
Targets Not Met	25	65	62	15	14
Results Unknown[c]	1	6	3	2	0
Total Number of Measures	*191*	*344*	*350*	*220*	*203*
Share Met	*86%*	*79%*	*81%*	*92%*	*93%*

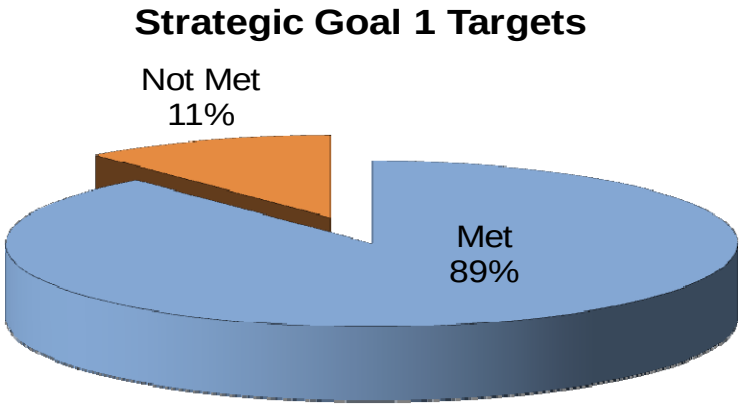
[a] In FY 2011, DOE reduced the number of reported measures from prior years after conducting an assessment of the quality and strategic relevance of all program goals and measures. Performance results for measures related to Recovery Act projects continue to be tracked internally and are available on Recovery.gov.

[b] Includes performance measures for Recovery Act projects (FY 2009: 142, FY 2010: 141).

[c] Results not available by end of fiscal year

Strategic Goal 1. Transform Our Energy Systems: *Catalyze the timely, material, and efficient transformation of the nation's energy system and secure U.S. leadership in clean energy technologies*

Currently, more than 80% of total U.S. primary energy and more than 95% of U.S. transportation fuel comes from fossil resources; these percentages are expected to change little over the next 25 years under a business-as-usual scenario. While U.S. energy consumption and carbon-dioxide emissions are also expected to increase significantly in this scenario, global energy consumption will rise more than twice as quickly due to growing population and increasing development in non-Organisation for Economic Co-operation and Development (OECD) countries. Likewise, water is integral to many energy technologies, and related water demands could be amplified in the future if climate change alters regional water cycles. Our energy technology R&D activities should be cognizant of this interdependence. This context frames the challenge before us: to achieve our long-term energy and environmental goals, we must change our current energy paradigm through concerted effort across public and private sectors. The progress in achieving this goal is measured annually through detailed performance metrics; FY 2011 results are summarized below.



Strategic Goal 1 Programs	FY 2011 Budgetary Expenditures[a] (million $)	FY 2011 Performance		
		Targets Met	Targets Not Met	Results Unknown
Energy Efficiency & Renewable Energy:				
Hydrogen & Fuel Cell Technologies	180	2		
Biomass & Biorefinery R&D	391	4		
Solar Energy	258	5		
Wind Energy	133	3	1	
Geothermal Technologies	137		1	
Water Power	66	1	1	
Vehicle Technologies	1,073	6		
Building Technologies	369	4		
Industrial Technologies	186	2		
Federal Energy Management	35		1	
State Energy Program	1,299	1		
Weatherization	3,525	1		

Electricity Delivery & Energy Reliability	1,368	7	1	
Nuclear Energy:				
New Nuclear Generation Technologies	271	5		
National Nuclear Infrastructure	343	2	1	
Fossil Energy:				
Clean Coal	921	8		
Petroleum Reserves	272	3		
Power Marketing Administration:				
Bonneville Power Administration	3,727	3		
Southeastern Power Administration	61	2		
Southwestern Power Administration	50	4		
Western Area Power Administration	513	3	1	
Energy Information Administration	106	2		
Loan Programs:				
Loan Guarantees	3,098	4	2	
Total	**$18,465**	**72**	**9**	

[a] Synonymous with delivered orders -- amounts accrued or paid for services performed, for goods and tangible property received, or for programs for which no current service is required such as loans. Budgetary expenditures are obtained from the Budgetary Standard General Ledger and are recorded/reported based on budgetary accounting rules. Includes capital expenditures but excludes such items as depreciation, changes in unfunded liability estimates, and certain other non-fund costs and allocations of Departmental Administration activities.

Priority Goals

Goal 1	**Retrofits**	**DOE and HUD will work together to enable the cost-effective energy retrofits of a total of 1.1 million housing units by the end of FY 2013 (of this number, DOE programs will contribute to retrofits of an estimated 1 million housing units)**
Summary of Progress	DOE has completed energy efficiency retrofits on 769,420 homes, resulting in an estimated annual energy savings of $437 per home retrofitted and an increase in the comfort and safety of homes for many low-income American families. These retrofits will save over 21 trillion Btu of energy and reduce greenhouse gases by approximately 2 million metric tons of carbon dioxide equivalent annually. Through FY 2011, DOE has exceeded the retrofit production target by 10%. At the current production pace and funding, DOE and HUD will reach the goal of 1.1 million retrofits by the end of FY 2013. Minor service interruptions within the network of weatherization providers have occurred due to recent reductions in annual funding; however, all milestones and targets are currently on track.	

Key Measure	Number of homes weatherized	FY 2011: Target 666,438; Result 769,420

Goal 3	**Renewable Energy**	**Double renewable energy generation (excluding conventional hydropower and biopower) by 2012**
Summary of Progress	The United States is on track to double renewable energy generation – from 71 terawatt-hours (TWh) of generation from solar, wind, and geothermal in 2008 to 145 TWh of generation by 2012. The Section 1705 Loan Guarantee Program came to a close on September 30, 2011, after the successful deployment of over $16 billion to 28 transactions. The 1705 program was created under Title XVII of the Energy Policy Act (EPAct) as part of the Recovery Act of 2009 to accelerate the deployment of renewable energy and electric power transmission projects. Almost 90 % of loan volume financed by the 1705 program is power generation projects. These DOE projects will add 4.7 gigawatts (GW) in new renewable energy capacity, which is expected to generate 12 million megawatt-hours of electricity. DOE appears on target to meet the goal. If wind, solar and geothermal each install at least as much in 2011 and 2012 as they did in 2010, capacity at the end of 2012 will be over 59 GW, which is estimated to generate over 145 TWh, more than double the 71 TWh baseline of 2008. Wind industry installations in 2011 and 2012 are expected to exceed 2010 installations. Assuming continued growth, wind will be 87% of 2012 renewable energy generation and 92% of 2012 capacity. Solar is also expected to double generation.	
Key Measure	Renewable generation capacity from projects receiving loan guarantees coming online	FY 2011: Target 0.1 GW; Result 0.1 GW Two renewable generation projects that have received loan guarantees are currently operating.
Supporting Measure 1	Renewable generation capacity from projects receiving conditional commitments for loan guarantees	Q3 FY 2011: Target 3.5 GW; Result 5.7 GW As of June 30, 2011, the DOE Loan Programs Office offered conditional commitments for loan guarantees to 22 renewable power generation projects totaling 5.7 GW in generation capacity.
Supporting Measure 2	Renewable generation capacity from projects that have achieved financial closing on loan guarantees	FY 2011: Target 3.5 GW; Result 4.7 GW As of Sept. 30, 2011, DOE closed loan guarantees for 19 renewable power generation projects supporting 4.7 GW in generation capacity.

Goal 4	**Advanced Battery Manufacturing**	**Assist in development and deployment of advanced battery manufacturing capacity to support 500,000 plug-in hybrid electric vehicles (PHEV) per year by 2015**
Summary of Progress	The Battery Manufacturing Priority Goal is on track. Since the start of this goal, DOE has verified initial battery production at A123Systems (Livonia, MI), Johnson Controls (Holland, MI), EnerDel (Indianapolis, IN) and Saft Industrial Battery Group (Jacksonville, FL). Each of these companies is on track to meet its respective production capacity target. The diversity of industrial partners involved reduces the impact on goal achievement if any one company does not meet its production capacity target.	

Goal 5	**Nuclear Loan**	**Commit (conditionally) to loan guarantees for two nuclear power facilities to add new low-carbon emission capacity of at least 3,800 megawatts during 2010**
Summary of Progress	This goal was not met on the anticipated timeline. DOE remains committed to safe and secure nuclear power and will continue to review applications for loan guarantees for nuclear power projects. Some elements of loan guarantees remain outside of the Department's control including market forces, quality of applications and rate at which applicants proceed with their required activities. As part of our due diligence process, we seek input from, and rely on approvals by, other nuclear-related federal agencies to include the Nuclear Regulatory Commission, to ensure the safety and soundness of the projects we support.	
Key Measure	Number of loan guarantees for nuclear power facilities (conditional commitments)	FY 2010: Target 2; Result 1 Goal not achieved in FY 2010; measure closed out.

Performance Metric Examples

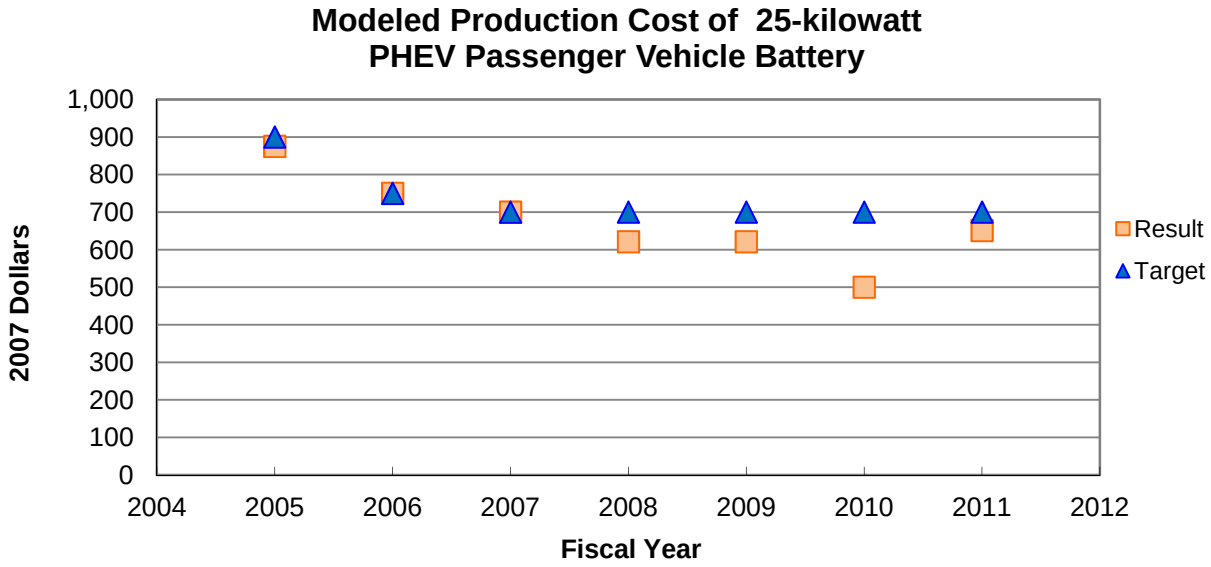
Measure	FY 2011 Result
Renewable Energy	
Photovoltaic (PV) Energy Systems, Crystalline Silicon – Reduce the levelized cost of solar electricity from photovoltaics for residential applications (8-20 cents per kWh)	Significant cost reductions occurred in the price of photovoltaic modules, from $1.95/watt in September 2010 to $1.22/watt in September 2011, allowing the program to meet its goal.
Wind – Number of states with at least 1,000 megawatts of wind energy installed (14 states)	By end of FY 2011, 14 states had greater than 1,000 megawatts of wind installed, with Texas having greater than 10,000 megawatts installed. [states included: TX, CA, OR, WA, WY, CO, KS, ND, MN, IA, IL, IN, NY, OK]

Transportation	
Vehicle Technologies – Reduce the cost of electric-drive technologies; demonstrate through data, simulation and modeling an inverter/motor, when combined, of 1.1 kilowatt per kilogram, 2.7 kilowatt per liter, at a cost of $18 per kilowatt peak	Through test data, simulation, and modeling it was determined that using a number of advances in inverter and motor technology could yield a traction drive system that meet the target specifications. Technology advances include the novel flux coupling motor, the current source inverter, integration of the two to eliminate the inductor in the inverter, and use of advanced power module packages.
Efficiency	
Residential Buildings – Complete an energy savings measures package for new residential buildings at net zero financed cost to the homeowner for one major climate region	Building America Program completed 2 reports. One report is for new home construction measures at 20% and 30% savings in over 30 locations across 5 major climate zones. Second report is for existing homes measures at 15% and 20% energy savings in over 30 locations across 5 climate zones. These reports will serve as key reference points to guide ongoing research aimed at reducing first costs and increasing energy savings.
Industry – Achieve an estimated 100 trillion Btu energy savings from applying EERE technologies	Achieved 443 trillion Btu of persistent energy savings in FY 2011
Electric Grid	
Smart Grid – Demonstrate 10% peak load reduction or improvement in asset utilization on 2 feeder systems	Based on monitoring and data collection, 2 project sites have successfully demonstrated at least 10% peak load reduction on their feeder systems and improved their asset utilization.

Clean Energy	
Clean Coal – Support development and deployment of advanced low cost, low carbon, energy efficient electrical generation technologies; targeting <12% increase in cost of electricity (COE) compared to 2003 baseline for near-zero emissions integrated gasification combined cycle (IGCC) with carbon capture and storage (CCS) system. The baseline COE is 9.4 cents/kilowatt-hour ($2007)	Annual target was met by completing work on key subsystems within an IGCC-CCS system that contribute to lower parasitic power, efficient gas separation, low-cost air separation, and more efficient fuel handling and feed systems. This work includes physical demonstration of the technologies along with system analysis to relate the work accomplished to COE impacts. Systems analysis studies, coordinated by the National Energy Technology Laboratory, reflected a 16% overall capital cost reduction, 2.9% increase in efficiency, and 12% decrease of COE when Warm Gas Cleanup with Hydrogen Transport Membrane technology were integrated.
Light Water Reactor Sustainability – Develop the scientific knowledge to extend existing nuclear plant operating life beyond the current 60-year limit and ensure their long-term reliability, productivity, safety, and security by conducting R&D activities in partnership with national laboratories, industry, universities, and international partners.	DOE made substantial progress in support of extending the operating life of existing nuclear power plants. There was a significant increase in research conducted in FY 2011, with all 57 scheduled deliverables completed by the end of the year. Significant research results include the completion of enhanced concrete and cable inspections at the Ginna nuclear power plant; a detailed assessment of the experiments needed to understand irradiation-assisted stress corrosion cracking; the initiation of three instrumentation-and-controls-related pilot plant projects; the delivery of an initial test version of the next generation safety analysis code, R7; and the irradiation of silicon carbide cladding samples at the High Flux Isotope Reactor.
Note: Detailed reports for all measures are in the section on "Performance Results" at the back of this report.	

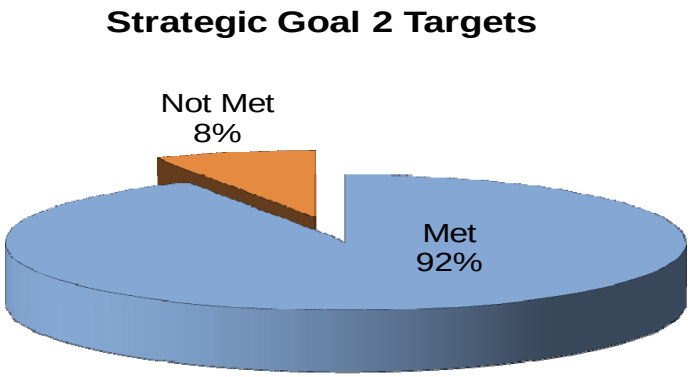
Performance Trends

Vehicle Technologies. DOE has demonstrated progress in the vehicle technologies area by lowering the modeled cost of a 25-kilowatt, lithium-ion battery for passenger hybrid electric vehicles (PHEV) from a baseline cost of $3,000 in 1998 to $1,180 in FY 2003 to below $700 in FY 2011. Cost effective batteries will enable even greater reductions in oil use over the long term. It should be noted that the performance metric for PHEV batteries is the total cost for a 25-kilowatt battery system where 25 kilowatts is the battery power requirement for a mid-sized vehicle.



Strategic Goal 2. The Science and Engineering Enterprise: *Maintain a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity, with clear leadership in strategic areas*

The Department of Energy supports basic research into the smallest constituents of matter; the most fleeting subatomic, atomic, and chemical transitions; and the structure and properties of materials and biological systems. We are the largest federal funder of the physical sciences. This basic research extends the understanding of nature; enables new technologies that support the Department's energy, environment, and security missions; and improves the quality of life of all Americans. Scientific discovery feeds technology development; and, conversely, technology advances enable scientists to pursue an ever more challenging set of questions. The Department strives to maintain leadership in fields where this feedback is particularly strong, including materials science research, bio-energy research, and high-performance computing. The progress in achieving this goal is measured annually through detailed performance metrics; FY 2011 results are summarized below.



Strategic Goal 2 Programs	FY 2011 Budgetary Expenditures[a] (million $)	FY 2011 Performance		
		Targets Met	Targets Not Met	Results Unknown
Advanced Scientific Computing Research	464	2		
Basic Energy Sciences	1,906	4		
Biological & Environmental Research	947	6		
Fusion Energy Sciences	435	3	1	
High Energy Physics	950	4		
Nuclear Physics	626	5	1	
Total	**$5,328**	**24**	**2**	

[a] Synonymous with delivered orders -- amounts accrued or paid for services performed, for goods and tangible property received, or for programs for which no current service is required such as loans. Budgetary expenditures are obtained from the Budgetary Standard General Ledger and are recorded/reported based on budgetary accounting rules. Includes capital expenditures but excludes such items as depreciation, changes in unfunded liability estimates, and certain other non-fund costs and allocations of Departmental Administration activities.

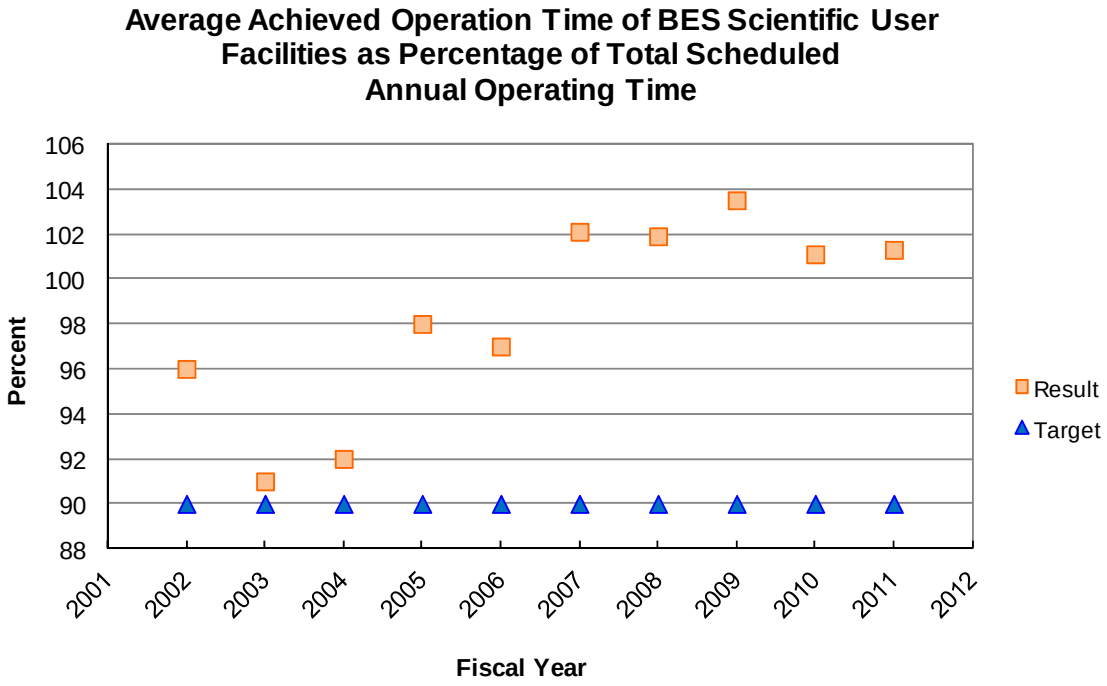
Performance Metric Examples

Measure	FY 2011 Result
Facility Operations	
Advanced Scientific Computing Research/ Capability Computing – usage of primary supercomputer at National Energy Research Scientific Computing Center for capability computing (computations that require at least 1/8 of this resource, 4,096 processors)	49% average usage (target: >=35%)
Research	
Nuclear Physics/ CEBAF Detector – effective usage of integrated delivered beam for experimental research in each Hall at the Continuous Electron Beam Accelerator Facility (CEBAF)	84% effective usage (target: >=80%)
Future Facilities	
High Energy Physics/ Construction – cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects	3% cost variance; 4% schedule variance (target: <10%)
Note: Detailed reports for all measures are in the section on "Performance Results" at the back of this report.	

Performance Trends

Scientific Facilities. The DOE national science user facilities provide the nation's researchers with state-of-the-art, discovery-class tools – the large machines of modern science. Discovery-class tools enable researchers to view and to model the world at its extremes – from the tiniest bits of matter to the limits of the cosmos. These tools attract researchers from all over the world and enable discoveries that truly change the course of science. These research facilities are large and typically require resource commitments well beyond the scope of any nongovernmental institution. Because the initial cost of the facilities is large – often in the hundreds of millions, even billions, of dollars – and the research they support is unique, operating the facilities well is also a high priority. The chart below shows the results for the Basic Energy Sciences (BES) facilities, where the ratio of actual average operation time to

planned operational hours has been greater than the target of 90% for each year. These results demonstrate efficient use of funding for leading research in intense x-ray sources, neutron scattering centers, electron beam characterization capabilities, and nanoscale science.



Note: Percentages may exceed 100% due to the definition for this metric of "scheduled hours" as "estimated planned hours" at the time the appropriation becomes law.

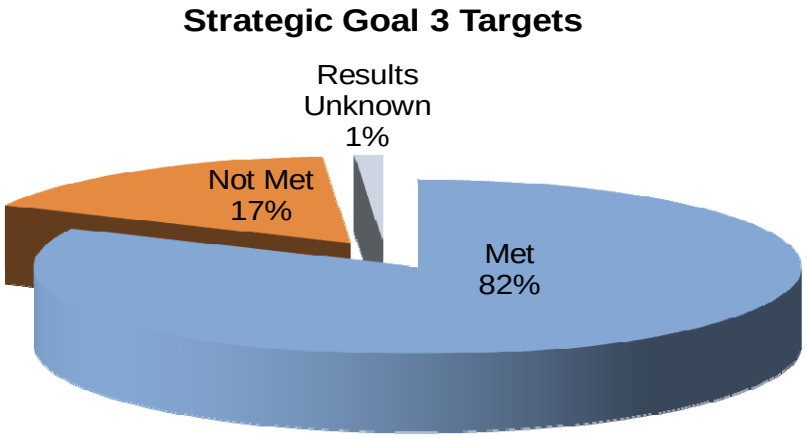
Strategic Goal 3. Secure Our Nation: *Enhance nuclear security through defense, nonproliferation, and environmental efforts*

The Department of Energy—primarily through the National Nuclear Security Administration—is central to preventing proliferation and nuclear terrorism and sustaining a safe, secure, and effective nuclear arsenal. DOE has added responsibility for cleaning up the environmental legacy of the Cold War's nuclear weapons complex. Through engagement with the International Atomic Energy

Agency and other international and interagency partners, the Department has a leading role in nonproliferation and cooperative threat-reduction programs. This expertise positions the Department ideally to help shape policy surrounding future deployment of nuclear power globally. Just as the Department is the trusted authority on the safety, security, and effectiveness of the U.S. nuclear weapons stockpile, it can apply science, technology, and engineering to ensure future nuclear power systems can be deployed safely and securely with appropriate mitigation of risks from terrorism and proliferation.

The Department has the monumental task of cleaning up the environmental legacy from five decades of nuclear weapons development and government-sponsored nuclear energy research. We have been successfully mitigating the technically challenging risks and have made substantial progress in nearly every area of nuclear waste cleanup, including stabilizing and consolidating special nuclear material and safely storing tons of used nuclear fuel. We have continued to build momentum in disposing of solid radioactive wastes, remediating contaminated soil and water, and deactivating and decommissioning radioactively contaminated facilities, with each succeeding year building on the last.

Our Intelligence and Counterintelligence program provides the Secretary, his staff, and other policymakers within the Department timely, technical intelligence analyses on all aspects of foreign nuclear weapons, nuclear materials, and energy issues worldwide. Progress for these and other programs in securing our nation is measured annually through detailed performance metrics. Most FY 2011 results are detailed in this document. Intelligence and Counterintelligence results are provided by the Office of the Director of National Intelligence.



Strategic Goal 3 Programs	FY 2011 Budgetary Expenditures[a] (million $)	FY 2011 Performance		
		Targets Met	Targets Not Met	Results Unknown
NNSA Weapons Activities:				
Directed Stockpile Work	1,964	3	1	
Science Campaign	359	3		
Engineering Campaign	151	5		
Inertial Confinement Fusion Ignition & High Yield Campaign	497	3		1
Advanced Simulation & Computing Campaign	635	3		
Readiness Campaign	156	4		
Readiness in Technical Base & Facilities	1,870	4		
Secure Transportation Asset	244	3		
Nuclear Counterterrorism Incident Response	243		1	
Facilities & Infrastructure Recapitalization	101	2		
Site Stewardship	83	2		

Defense Nuclear Security	791	4	1	
Cyber Security	127	1	2	
NNSA Defense Nuclear Nonproliferation:				
Nonproliferation & Verification R&D	346	6		
Nonproliferation & International Security	186	5		
International Nuclear Materials Protection & Cooperation	561	3	2	
Elimination of Weapons-Grade Plutonium Production	67	2		
Fissile Materials Disposition	837	2	1	
Global Threat Reduction Initiative	353	3	1	
NNSA Naval Reactors	968	4	1	
NNSA Office of the Administrator	435	2		
Environment Management	8,056	3	4	
Legacy Management	160	2		
Total	**$19,190**	**69**	**14**	**1**

[a] Synonymous with delivered orders -- amounts accrued or paid for services performed, for goods and tangible property received, or for programs for which no current service is required such as loans. Budgetary expenditures are obtained from the Budgetary Standard General Ledger and are recorded/reported based on budgetary accounting rules. Includes capital expenditures but excludes such items as depreciation, changes in unfunded liability estimates, and certain other non-fund costs and allocations of Departmental Administration activities.

Priority Goals

Goal 2	**Legacy Waste**	**Reduce the Department's Cold War legacy environmental footprint by 40% by 2011**
Summary of Progress	Completed goal of 40% footprint reduction 5 months early and under budget. By the end of FY 2011, reduced approximately 900 square mile legacy footprint to 318 square miles, or approximately 66% of the total footprint.	
Key Measure	Reduce footprint by 40%	Q3 FY 2011: Target 41%; Result 50% Exceeded goal by completing certain sub-areas of the Hanford and Savannah River sites ahead of schedule.

Supporting Measure 1	Maintain cumulative cost performance index of 90% or greater	FY 2011: Target 90%; Result 107%
Supporting Measure 2	Maintain cumulative schedule performance index of 90% or greater	FY 2011: Target 90%; Result 101%

Goal 6	**Secure Nuclear Materials**	**Make significant progress toward securing the most vulnerable nuclear materials worldwide within 4 years**
Summary of Progress	In response to the threat of international terrorists acquiring material to develop weapons of mass destruction, DOE's NNSA/Defense Nuclear Nonproliferation program works closely with a wide range of international partners, U.S. federal agencies, DOE national laboratories, and the private sector to detect, secure, and dispose of dangerous nuclear and radiological material. Thwarting the ability for terrorists, or rogue states that harbor terrorist organizations, to acquire nuclear weapons or weapons-usable materials is the primary goal of this program and directly supports the Department's goal to secure the most vulnerable nuclear material in 4 years announced in Prague in April 2009. At the end of FY 2011, the two programs have made significant progress towards achieving this goal. DOE/NNSA has made significant progress towards securing vulnerable nuclear material by removing a cumulative total of 3,125 kilograms of nuclear materials from at least two dozen countries – enough highly enriched uranium to make more than 120 nuclear weapons. A total of 272 kilograms of nuclear material was removed during FY 2011 – enough for more than 10 nuclear weapons.	
Key Measure 1	Cumulative number of kilograms of vulnerable nuclear material (highly enriched uranium and plutonium) removed or disposed	FY 2011: Target 3,297; Result 3,125 The program achieved 95% of the cumulative target in FY 2011. In the first quarter, 232 kilograms of highly enriched uranium (HEU) were removed (43.5 kilograms from Poland, 88 kilograms from Belarus, 13.1 kilograms from Serbia, 50.7 kilograms from Ukraine, 1.4 kilograms from Canada, 3.4 kilograms from Italy, 12.7 kilograms from Belgium, and 19.7 kilograms from the United States). There were no additional kilograms of HEU removed or disposed of during the second or third quarters. In the fourth quarter 39.7 kilograms of HEU were removed or disposed of (33 kilograms down blended in Kazakhstan, 5.8 kilograms removed from South Africa, and 0.9 kilograms removed from Canada).

Key Measure 2	Cumulative number of buildings containing weapons usable material with completed material protection, control, and accounting upgrades	FY 2011: Target 218; Result 218 Achieved target; increase of 5 buildings in FY 2011.

Goal 7	**Nuclear Weapons**	**Maintain the U.S. nuclear weapons stockpile and dismantle excess nuclear weapons to meet national nuclear security requirements as assigned by the President through the Nuclear Posture Review**
Summary of Progress	DOE/NNSA continues to take important steps to maintain the nuclear weapons stockpile and dismantle excess nuclear weapons. The Secretaries of Energy and Defense completed the joint "Annual Weapon Stockpile Assessment" for the President, which addresses the status of safety, reliability, performance, and military effectiveness for each warhead in the U.S. nuclear weapon stockpile. The program continues to meet its objectives of assuring that 100% of the warheads in the stockpile are safe, secure, reliable, and available for deployment. Despite numerous technical challenges, DOE/NNSA has delivered sufficient life extended W76 warheads to meet the Navy's deployment schedule in FY 2010 and FY 2011 and remains on track to meet future deliveries.	
Key Measure	Annual percentage of warheads in the Stockpile that is safe, secure, reliable, and available to the President for deployment (long-term assurance)	FY 2011: Target 100%; Result 100% Achieved annual target, whereby the nuclear warheads in the active stockpile were assessed through the Annual Assessment process as being safe, secure, reliable (effective) and available to the President for deployment.
Supporting Measure 1	Cumulative percentage of progress in completing Nuclear Weapons Council (NWC) - approved W76-1 Life Extension Program (LEP) activity	FY 2011: Target 65%; Result 65% Achieved cumulative annual target in accordance with the new W76-1 baseline schedule. The previous target for FY 2011 was 56%. The target has been changed and the production program re-baselined as a result of the implementation of the Nuclear Posture Review and in accordance with the current planning in the DoD/ DOE Nuclear Weapons Council Requirements and Planning Document.

Supporting Measure 2	Cumulative percent reduction in projected W76-1 warhead production costs per warhead from established validated baseline, as computed and reported annually by the W76 Life Extension Program (LEP) Cost Control Board	FY 2011: Target 1%; Result 0.7% Did not achieve the annual target, based on the current recovery schedule. The cost savings realized for the first quarter were consumed by ongoing resolution of technical issues associated with the W76-1 production. For the MC4713 Launch Accelerometer, the cost savings were expended on additional technical support, additional process analyses, acceleration of test equipment availability, and tooling procurements to provide necessary mitigation for process variations (that will occur during long-term manufacturing as in the W76-1 schedule) in order to continue fully supporting ramp-up to full scale production and final steady state production.

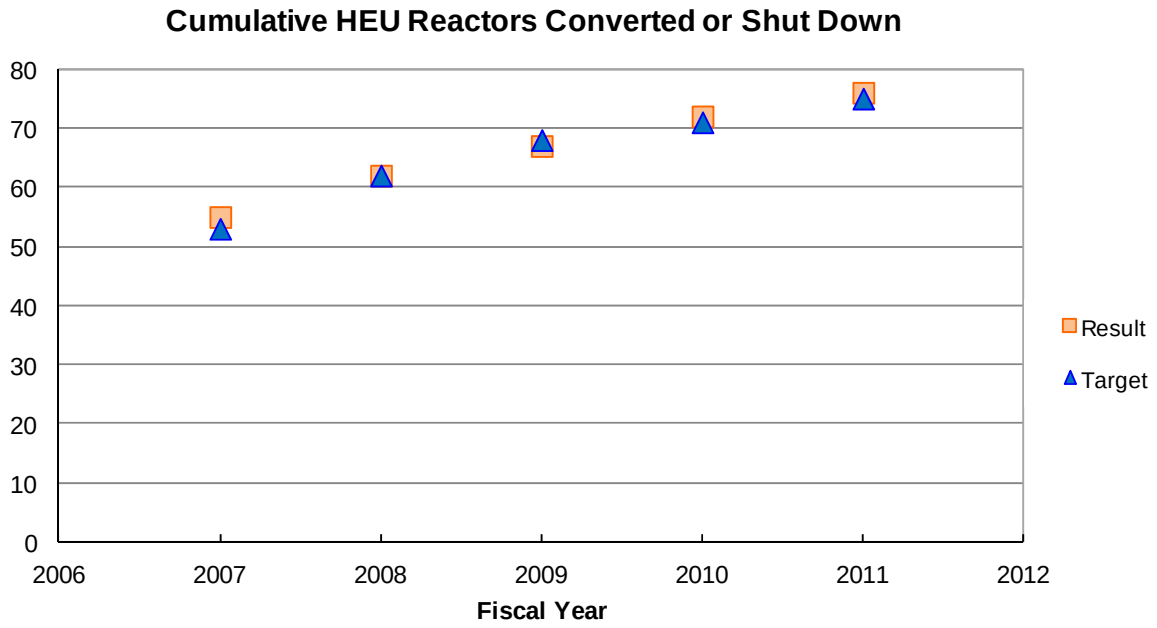
Performance Metric Examples

Measure	FY 2011 Result
Nuclear Material	
Global Threat Reduction Initiative – cumulative number of highly enriched uranium (HEU) reactors converted or verified as shut down prior to conversion	Convert or verified the shutdown of a cumulative 76 research reactors, exceeding the annual target by 1. Four reactors were converted or shut down this year, 1 in China, 1 in Czech Republic, and 2 in Russia. To date conversion of these reactors has resulted in HEU avoidance of ~360/kg per year.
Russian HEU – cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement	Exceeded the annual target of 432 metric tons (MT), by 1MT, for a total of 433MT by confirming the elimination of an additional 30 MT of HEU. This provides assurance that weapons-grade material is being eliminated from Russia's stockpile and is no longer available for military use.
Detection Technology – cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect Special Nuclear Material movement	Met the annual target of 80% cumulative progress towards demonstrating the next generation of technologies to detect Special Nuclear Material movement. This result is important because it improves U.S. capability to detect the illicit transport and diversion of special nuclear material.

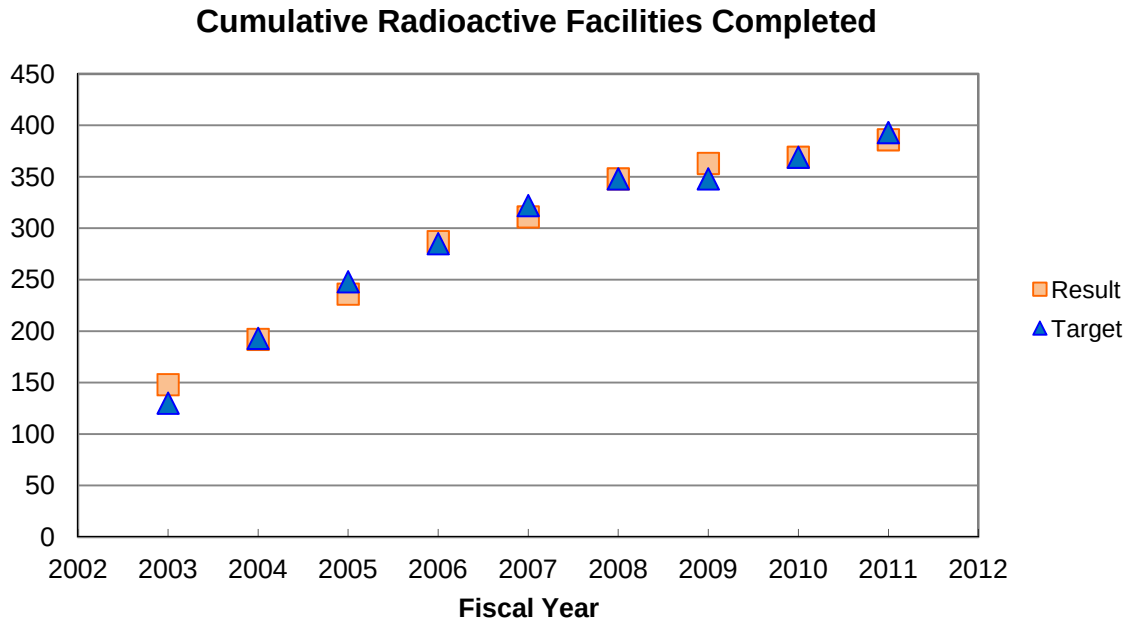
Detection Sites – cumulative number of Second Line of Defense sites with nuclear detection equipment installed [including cumulative number of Megaports completed]	Completed 460 of 463 targeted Second Line of Defense sites, including 39 of targeted 45 Megaports. Achieving this result is important because it provides host governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials. Because this target was missed, deployment of detectors for high-transit ports must be delayed in the coming fiscal years.
Nuclear Weapons	
Stockpile Maintenance - Annual percentage of items supporting Enduring Stockpile Maintenance completed (annual percentage of prior-year non-completed items completed)	Achieved the annual target by completing at least 95% (100% of prior year) of scheduled stockpile maintenance. This result is important because it keeps active nuclear weapons fully operational, if needed by the President.
Tritium Production - Cumulative number of Tritium-Producing Burnable Absorber Rods (TPBARs) irradiated in Tennessee Valley Authority (TVA) reactors to provide the capability of collecting new tritium to replace inventory for the nuclear weapons stockpile	Achieved the cumulative target of 1,328 TPBARs (increase of 240 TPBARs) irradiated in TVA reactors. This result is important because irradiation of TPBARs is essential for the establishment of an assured domestic source of tritium to meet the continuing needs of the nuclear weapons stockpile.
Legacy Waste	
Decommissioning – cumulative number of radioactive facilities where decommission work is complete	393 facilities completed (target = 400)
Disposition – cumulative total of enriched uranium containers packaged for disposition	8,007 containers packaged (target = 7,953)
Note: Detailed reports for all measures are in the section on "Performance Results" at the back of this report.	

Performance Trends

Global Threat Reduction. DOE's efforts in the area of global threat reduction contribute to the goal of preventing nuclear terrorism by reducing and protecting vulnerable nuclear and radiological materials located at civilian sites worldwide. The following chart shows progress toward the goal of increasing the number of highly enriched uranium (HEU) reactors converted or shut down prior to conversion.



Environmental Cleanup. DOE has reduced the Cold War legacy environmental footprint by 66% by the end of FY 2011, widely surpassing the Priority Goal target of 40%. Over the years the program has consistently tracked a set of corporate performance metrics that show the incremental progress in cleaning up components of our legacy sites, from highly enriched uranium to tank waste to highly dispersed but less radioactive TRU waste to the numbers of buildings and release sites completes. For example, the following chart shows the cumulative performance in deconstructing and decommissioning radioactive facilities, a key indicator of cleanup progress. The program has completed about 36% of the estimated 1,080 total radioactive facilities.



Strategic Goal 4. Management and Operational Excellence: *Establish an operational and adaptable framework that combines the best wisdom of all Department stakeholders to maximize mission success*

Success in achieving the Department's first three strategic goals requires a sustained commitment to management excellence from headquarters to every site office, service center, laboratory, and production facility. The Department seeks to develop the most highly qualified, capable, and flexible federal workforce. Focus is also on improving the rigor of our research and development management so that only those activities that have the greatest potential and likelihood for impact are supported; decisions are fully informed by rigorous peer review; and results of supported activities are effectively disseminated. Project management improvements are relentlessly pursued and regulatory authorities are exercised in a manner that is strategic and efficient. The management principles require the implementation of a performance-based culture that clearly links work to agency goals, holds employees accountable for meeting the mission, and appropriately rewards employees for their efforts. This requires careful use of public resources, faithful compliance with the highest ethical and legal standards, increased transparency of financial and operational data systems, vigilant

protection of safety and security, and effective information technology and cyber-security systems. The progress in achieving this goal is evaluated annually through measures of performance; FY 2011 progress is summarized below.

Performance Metric Examples

Measure/Goal	FY 2011 Result
Employee Hiring Time – reduce average time-to-hire for General Schedule and equivalent positions (from initiation date to entry on duty date) from 174 to 80-day average while continuing to attract quality hires and ensure the right skill sets are on board by 2012	Average was reduced to 100 days; progress also made to develop a tracking and reporting system to provide more meaningful data for hiring managers
Website Reform – reduce, consolidate, and/or move 25% of websites to Energy.gov platform by August 2011; 40% by December 2011	Reduced, consolidated, and moved websites to the Energy.gov platform to achieve cost savings; new web platform was launched that includes 16 consolidated sites in an open source content management system and cloud hosting environment
Support Service Contracts – achieve cost savings by October 2011 through efficiencies in support service contracts	Achieved a 27% cost reduction
Financial Transparency – implement financial transparency by April 2011 (e.g., functional cost reporting)	Quarterly reporting capability was developed for timely and reliable functional institutional cost information from our national laboratories; dashboard prototype is in the development stages
Project and Contract Management – complete more than 90% of capital asset projects at the original scope and within 110% of the cost baseline	Office of Science achieved 100% success rate, exceeding target
Fleet Reduction – reduce headquarters fleet by 35% by December 2011; reduce DOE-wide fleet by 35% within three years; increase use of alternative fuel vehicles	Reduced headquarters fleet by 35% and replaced more than 750 vehicles DOE-wide with hybrid vehicles

Strategic Sourcing – provide common approach to core supplies and services; achieve cost savings/avoidance	Significant costs were saved or avoided within the program offices by expanding the use of bulk purchasing and other methods
Disposition of Excess Real Property – eliminate excess real property/buildings starting in June 2011 (1.3 million square feet in FY 2011 and 1.7 million square feet in FY 2012)	Eliminated a cumulative 4.6 million gross square feet of excess real property, lowering DOE's overall stewardship costs

FY 2010 Unmet Performance Goals

Program	Activity	FY 2010 Performance Goal/Target	Status
Strategic Goal 1. Transform Our Energy Systems			
Solar	Market Integration	Complete technical assistance to 20 Solar America Cities to address issues such as financing, permitting, city planning, and outreach	Target met in first quarter of FY 2011. Technical assistance was provided to 20 Solar Cities.
Wind Energy	Low Wind Speed Technology	3.8 cents per kilowatthour modeled cost of wind power in land-based Class 4 wind speed areas (i.e., 13 mph annual average wind speed at 33 feet above ground) 9.10 cents per kilowatthour modeled cost of wind power in Class 6 wind speed areas (i.e., 15 mph annual average wind speed at 33 feet above ground) for shallow offshore systems	Target met in FY 2011. Measure changed to market cost instead of modeled cost in FY 2011.
Wind Energy	Technology Application	30 states with at least 100 megawatts of wind power capacity installed, and 7 states with over 1,000 megawatts of wind power capacity installed	Target still unmet. Measure changed to "states with >1000 megawatts" to enable large-scale deployment.
Biomass	Utilization of Platform Outputs	Resolution on critical factors (e.g. Loan Guarantees, Debt Financing, NEPA determination) allowing for a decision to enter into an Award 2 for the construction of up to four more biorefinery projects (up to five in total)	Target met in FY 2011

Program	Activity	FY 2010 Performance Goal/Target	Status
Electricity Delivery and Energy Reliability	Energy Storage Program	Demonstrate the capability of novel lead-carbon ultrabatteries, using operational modes developed specifically for PV-hybrid battery systems, to provide at least four times the cycle life of batteries currently used Lead-acid (VRLA) batteries, currently used to support residential PV, are reduced to 80% capacity after 40 cycles. Advanced lead-carbon batteries have been shown to have a cycling life similar to lithium-ion batteries but at one third the cost. After developing appropriate charge/discharge and equalization protocols, the ability of these new batteries to sustain effectiveness for over 160 full cycles will be demonstrated, resulting in a corresponding decrease in system cost.	All project goals were achieved and all milestones were met on schedule. FY 2010 target of showing that the Ultrabattery technology was capable of achieving four times the cycle-life of conventional VRLA batteries in a specific PV-hybrid cycling environment was easily met. Results to date indicate that the Ultrabattery technology is capable of achieving over six times greater cycle life than conventional VRLA technology. The secondary goals of this work were also achieved by defining operating parameters for using the Ultrabattery in PV-hybrid power systems. Full details will be available in the final report on the project.
Loan Programs	Loan Guarantees	Percentage of projects at commercial operation stage FY 2010 Target: 7%	This measure is no longer being tracked.

Program	Activity	FY 2010 Performance Goal/Target	Status
Strategic Goal 2. The Science and Engineering Enterprise			
Nuclear Physics	Continuous Electron Beam Accelerator Facility (CEBAF) Detector	Achieve at least 80% of the integrated delivered beam used effectively for experimental research in each of Halls A, B, and C at the CEBAF measured as a percentage of the scheduled delivered beam considered effective for each Hall	FY 2010 target was not met. Performance measure was continued with a revised annual target based on appropriated funding for FY 2011.
Strategic Goal 3. Secure Our Nation			
Weapons Activities/ Directed Stockpile Work	W76 Life Extension Program (LEP)	Cumulative percent reduction in projected W76 warhead production costs per warhead from established validated baseline, as computed and reported annually by the W76 LEP Cost Control Board FY 2010 Target: 1%	Current and future quarterly reporting will likely remain "unmet," since LEP site-based costs continue to increase due to difficult technical issues and their resolution. Additional W76-1 LEP costs are anticipated in FY 2012 due to resolution of remaining technical and delivery issues that surfaced in mid-FY 2009, FY 2010, and FY 2011. To mitigate these additional costs, cost efficiencies at the production plants were implemented in FY 2009, FY 2010 and FY 2011. Warhead per unit cost savings over the remaining 8-year production period will continue to be identified.

Program	Activity	FY 2010 Performance Goal/Target	Status
Weapons Activities/ Directed Stockpile Work	W76 LEP	Cumulative percentage of progress in completing Nuclear Weapons Council-approved W76-1 Life Extension Program activity FY 2010 Target: 52%	Achieved 100% of the cumulative annual target for FY 2010 in accordance with the new W76-1 baseline schedule. The production program has been re-baselined as a result of the implementation of the Nuclear Posture Review and in accordance with the current planning in the DoD/DOE Nuclear Weapons Council Requirements and Planning Document. The new baseline (supporting the Nuclear Posture Review, based on the NWC decision to extend the production of the W76-1 Life Extension Program and the 2011 RPD) is formally released through the NWSM, NWSP (and the 2011 RPD) and is incorporated into the W76-01 PCD (2011-A dated 07/06/11). The W76-1 Life Extension Program continues to maintain or exceed the baseline production rates established in FY 2009 despite the technical issues encountered prior to full-scale production.
Weapons Activities/ Science Campaign	First Principles Physics Models	Cumulative percentage of progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment FY 2010 Target: 60%	FY 2010 target was met by achieving 62.6% progress in FY 2011.

Program	Activity	FY 2010 Performance Goal/Target	Status
Weapons Activities/ Inertial Confinement Fusion Ignition and High Yield Campaign	National Ignition Facility (NIF)	Cumulative percentage of progress towards demonstrating ignition (simulating fusion conditions in a nuclear explosion) at the National Ignition Facility to increase confidence in modeling nuclear weapons performance FY 2010 Target: 100%	In FY 2011, continued beginning first integrated ignition experiments. While NIF is fully operational with many significant accomplishments, NIF has not demonstrated ignition; and the path to achieving ignition remains an open scientific challenge.
Weapons Activities/ Inertial Confinement Fusion Ignition and High Yield Campaign	Nuclear Explosive Package Assessment	Cumulative percentage of progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment FY 2010 Target: 60%	FY 2010 target was met by achieving 62.6% progress in FY 2011.
Weapons Activities/ Nuclear Counterterrorism Incident Response	Emergency Operations Readiness	Emergency Operations Readiness Index measures the overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide. FY 2010 Target: 91	FY 2010 target is such that increased performance in subsequent years cannot compensate for underperformance
Weapons Activities/ Site Stewardship	NNSA Long-Term Stewardship Program	Cumulative cost savings totaling 12% over six years for the NNSA Long-Term Stewardship program demonstrated by comparison of the actual annual costs of performing the Stewardship activities at a site as compared to the budgeted annual costs of performing FY 2010 Target: 2%	Fluctuations in the program savings varies year by year due to inconsistencies in regulatory requirements from year to year. Due to these inconsistencies this measure will no longer be tracked beginning in FY 2012.

Program	Activity	FY 2010 Performance Goal/Target	Status
Weapons Activities/ Cyber Security	Site Assessment	Annual percentage of planned Cyber Security Site Assessment Visits conducted by the Office of the Chief Information Officer Cyber Security Program Manager at NNSA sites that resulted in a rating of "effective" FY 2010 Target: 100%	End of FY 2010 effectiveness rating was 90%. Since the performance measure is annual, the measure stands as unmet. In FY 2011, the sites that were assessed had an effectiveness rating of 100%; however, 3 sites planned for assessment in FY 2011 were moved to FY 2012.
Defense Nuclear Nonproliferation/ International Nuclear Materials Protection and Cooperation	Regulations	Cumulative number of regulations in the development phase for the Russian Federation and FSU countries FY 2010 Target: 194	FY 2010 target was met as the program exceeded its FY 2011 target.
Defense Nuclear Nonproliferation/ International Nuclear Materials Protection and Cooperation	Megaports	Cumulative number of Megaports with host country cost-sharing, resulting in decreased cost to the U.S. program (estimated cost sharing value) FY 2010 Target: 12 ($66 million)	FY 2010 target was met as the program achieved most of its FY 2011 target.
Defense Nuclear Nonproliferation/ International Nuclear Materials Protection and Cooperation	Second Line of Defense (SLD) Sites	Cumulative number of SLD sites with nuclear detection equipment installed (cumulative number of Megaports completed) FY 2010 Target: 404 (41)	FY 2010 target for SLD was achieved during FY 2011; however, the target number of Megaports was not met.
Defense Nuclear Nonproliferation/ Elimination of Weapons-Grade Plutonium Production	Zheleznogorsk Fossil Plant	Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk, facilitating the shutdown of one weapons-grade plutonium production reactor FY 2010 Target: 98%	Cumulative target of completing 100% of the U.S.-funded construction is complete; Critical Decision-4 (Project Closeout) was approved by the NNSA on July 5, 2011.

Program	Activity	FY 2010 Performance Goal/Target	Status
Defense Nuclear Nonproliferation/ Elimination of Weapons-Grade Plutonium Production	Zheleznogorsk Fossil Plant	Annual Cost Performance Index for Zheleznogorsk construction as measured by the ratio of budgeted costs of work scheduled to actual costs of work performed FY 2010 Target: 1.0	This project has been completed and is in closeout.
Defense Nuclear Nonproliferation/ Fissile Materials Disposition	Mixed Oxide Fuel Fabrication Facility	Cumulative percentage of the design, construction, and cold start-up activities completed for the Mixed Oxide Fuel Fabrication Facility FY 2010 Target: 49%	FY 2010 target was met as the program achieved most of its FY 2011 target.
Environmental Management	Nuclear Facilities	Complete a cumulative total of 99 nuclear facilities	Target recalibrated in FY 2011 to 94 and achieved.
Environmental Management	Release Site Remediation	Complete remediation work at a cumulative total of 7,158 release sites	FY 2010 target was met – a cumulative 7,111 release sites were completed by the end of FY 2011.

FY 2011 Performance Results

The Department's performance measures and goals are tracked quarterly through a Performance Measure Manager (PMM) system. The annual progress made toward outcome-oriented, multi-year program goals is a key indicator of whether the Department is making progress toward its strategic goals. For FY 2011, the Department tracked 191 performance measures that provide detailed information and an assessment of progress for the program goals associated with the corresponding funding requests. DOE has reduced the number of reported measures from prior years after conducting an assessment of the quality and strategic relevance of all program goals and measures.

In the FY 2009 and 2010 *Annual Performance Reports*, DOE combined supplemental American Recovery and Reinvestment Act of 2009 (Recovery Act) and conventional base (no-year) appropriation performance measure outcomes. In FY 2011, DOE completed a comprehensive analysis of its performance measures to improve linkage of expenditures to outputs and outcomes and remove ineffective or unnecessary performance measures from the portfolio. As part of this analysis, DOE decided to exclude Recovery Act performance outcomes from this and subsequent annual reports, because information is readily available to the public through various websites (Recovery.gov, FederalReporting.gov). DOE also continues to monitor and analyze Recovery Act performance internally through the completion of all projects.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Hydrogen and Fuel Cell Technologies
Website: http://www.eere.energy.gov/topics/hydrogen_fuel_cells.html

Performance Goal: *Hydrogen & Fuel Cells*
Improve the catalyst utilization of fuel cells, as measured in units of kilowatts per gram (kW/g) of platinum group metal, from 2.8 kW/g in 2008 to 4.0 kW/g in 2011

Results:

FY	Target	Commentary
2011	Exceeded	Improved fuel cell power output per gram of catalyst (in units of kW per gram (kW/g) of platinum group metal), from 2.8 kW/g in 2008 to 5.6 kW/g in 2011.This was achieved using nanostructured thin film (NSTF) catalysts, developed by 3M. The high specific activity of these catalysts, which are based on nanoscale whiskers of platinum alloyed with cobalt and manganese, combined with the excellent transport characteristics of fuel cell electrodes incorporating NSTF, allows high power density to be achieved with low PGM loading.

Documentation: Result provided by 3M Corporation with commentary and reference saved in the Joule folder on the Q drive at Q:\EE-2H\1 - Joule, EE-1 Critical Milestone Doc & PART\2011 Joule\Q4\Fuel Cell System Supporting Documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Hydrogen and Fuel Cell Technologies
Website: http://www.eere.energy.gov/topics/hydrogen_fuel_cells.html

Performance Goal: *Hydrogen/Fuel Cells*
Relative to the 2010 baseline, decrease the capital equipment cost for hydrogen production using renewable resources by 10%. Two hydrogen production technologies that may be addressed include water electrolysis and bio-derived liquid reforming. 2010 baseline capital equipment costs include: water electrolysis, $2.65/gge (gallon of gasoline equivalent); pyrolysis bio-oil reforming, $2.45/gge.

Results:

FY	Target	Commentary
2011	Exceeded	Achieved over 10% capital cost reduction. The projected capital costs in 2011 for distributed catalytic autothermal reforming of pyrolysis oil was $2.13/gge of hydrogen delivered and dispensed (in $2005). This represents an improvement of 18% from the 2010 baseline and results from improvements in catalyst performance achieved through the use of a 0.5% Pt/Al2O3 BASF catalyst.

Documentation: Results were provided by NREL in their 2011 AMR presentation. These have been saved in the Joule folder on the Q drive at Q:\EE-2H\1 - Joule, EE-1 Critical Milestone Doc & PART\2011 Joule\Q4\Fuel Cell System Supporting Documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Biomass and Biorefinery R&D
Website: http://www.eere.energy.gov/topics/biomass.html

Performance Goal: *Biomass - Integrated Biorefineries*
Validate the total production capacity of 100 million gallons of advanced biofuels by 2014
FY 2011 target: +5 million gallons

Results:

FY	Target	Commentary
2011	Met	The Quarter 3 milestone outlined the three projects that met the Q3 milestone which provided the background for meeting both the milestone and the target. The validation of the additional 5 million gallons of biofuels production capacity was embodied in two Engineering Independent Reports (EIR) issued for both the Abengoa Hugoton and Mascoma Frontier Renewables projects.
2010	Not Met	There existed six projects with potential to meet this target and start construction in FY 2010 - Flambeau River Biofuels addition to the existing pulp mill in Park Falls, Wisconsin; New Page addition to the existing pulp mill in Wisconsin Rapids, Wisconsin; Mascoma Frontier Renewables Refinery in Kinross, Michigan; Red Shield Acquisition modification to the existing pulp mill in Old Towne, Maine; Lignol Biorefinery in Ferndale, Washington; and Pacific BioGasol West Coast Biorefinery in Boardman, Oregon. Insufficient readiness was achieved by these projects to be able to meet this performance target.
2009	Not Met	The Abengoa Bioenergy Biomass Kansas plant that is to be sited in Hugoton, Kansas was the commercial scale biorefinery that addresses this target. While the engineering is essentially complete, orders for long lead items are being placed (boilers and combustion equipment), vendor packages are being prepared (enzymatic hydrolysis equipment) and other infrastructure critical items are being managed (feedstock supply contract negotiations), the approval of the design by DOE is not possible since the Engineering Independent Review (EIR) process could not be initiated in time to verify this level of readiness by September 30, 2009. These final design and procurement efforts were undertaken in August and September, 2009, preventing the scheduling of the EIR until October/November 2009.

Documentation: The EIR reports are confidential and business sensitive and found in the files of the Golden Field Office. In summary, the EIR report, September, 2010, cited that the integrated technologies that comprise the existing design were technically sound for producing ethanol from biomass and indicated that the project should be capable of producing 6.8 million gallons per year initially and scale up to 12.6 million gallons per year.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Biomass and Biorefinery R&D
Website: http://www.eere.energy.gov/topics/biomass.html

Performance Goal: *Biomass - Biomass Feedstock Platform*
Reduce feedstock supply system logistics cost to 36.1 dollars per dry matter ton ($/DM ton, in $2007) to support the development of cost-effective, high tonnage feedstock logistics systems and enable the supply of biomass feedstocks for a growing bio-based industry

Results:

FY	Target	Commentary
2011	Met	This milestone was achieved through cumulative accomplishments demonstrated in the Fy11-Q1, Q2 and Q3 milestones. The Q1 milestone established the baseline system by which FY11 research would be compared in order to determine improvements to the system through field research and data. The Q2 milestone demonstrated that tarping is the preferred method for storing "dry," baled biomass in the conventional bale supply system design. This storage method minimizes dry matter losses relative to wrapped and uncovered storage, and results in a cost savings of $0.81 per dry ton. The Q3 milestone demonstrated an increase in biomass throughput during the grinding operation, which resulted in a cost saving of $0.88 per DM ton. The $0.01 remaining to achieve the overall cost reduction goal of $1.70 per DM ton was identified during Q4 in Indirect inefficiencies in collection and roadsiding operations and efficiencies in handling operations.
2010	Met	The focus was on methods to prevent storage losses due to bale moisture content. In FY 2009 a bale wrapping system was used to prevent the direct contact of water with bales to guarantee that losses due to moisture are kept below an acceptable 5%. In FY 2010, a more cost effective bale tarping method was investigated. A combination of the advancements made in the areas described above has resulted in the final cost of the supply system being reduced to the target cost of $37.80 per DM ton. Nutrient use efficiency - Several key assumptions were made and a methodology was constructed that established nutrient use efficiencies (lbs biomass/lbs nutrients) for both conventional and dedicated energy crop agronomic systems. These efficiencies were then evaluated against the conventional system for each dedicated energy crop of interest in every county determining if that crop would provide at least a 5% increase in nutrient use efficiency. Soil organic matter - Due to the limited amount of data available from Sun Grant Regional Feedstock Partnership field trials, the approach to satisfying the milestone has relied on environmental process modeling. The residue removal analysis tool being developed under the Regional Partnership provided the analysis framework. The modeling process has implemented a county average soil and management approach. Utilizing the residue removal tool, USDA-NRCS soils data baseline soil organic matter levels have been determined. The analysis then utilized accepted, state-of-the-art models to introduce the herbaceous species and management practices into the production system.
2009	Met	"The KDF will be functional and available for a limited number of users on October 1, 2009. The system will provide access to data from the SGI field trials, including uploading and downloading of spreadsheets as well as map based access to this data. Additionally, a complex security model to support user management of the availability of this data has been designed and partially implemented. When fully implemented in FY 2010, this will allow researchers to manage security for their own uploads and downloads. The system will also contain select datasets from the billion ton update, NASS, HSIP Gold, and a limited number of other datasets that have been provided through the KDF research efforts. This includes literature which will populate the Knowledge Compendium. None of this data will be automatically updated or otherwise vetted; however, automatic updates and data management are goals that will be explored in FY 2010 and FY 2011.

		We have produced a comprehensive, validated geo-database of US corn-based ethanol biorefineries which includes accurate geospatial location information, on-site storage capability for finished product, rail siding capacity and accessibility, barge access, and other distribution and transportation attributes. ORNL is also partnering with NREL to obtain additional production and feedstock attributes for the biorefineries which will be populated early in the next fiscal year. The geo-database is also being expanded for biodiesel and cellulosic production facilities and will be made available in early FY 2010 through the KDF. We have been working closely with the Billion Ton Update effort and two preliminary datasets have been received describing poplar (residues, thinning, and other) from 2007 and estimated crop residues from the 2009 POLYSYS baseline run in which the residues were harvested using a baler. These datasets have been used in the development of a data model which will be fully implemented in FY 2010. Currently, we are providing access to this preliminary data through a limited number of maps and made available for querying, visualizing, and downloading in the KDF. Extensive access to the data through the KDF interface including complex visualization and querying capabilities will also be completed early in FY 2010.
2008	Met	Replicated field trials using model energy crops were established across the most promising energy crop regions, and field trials are also underway to determine the effect of residue removal on crop productivity and soil health and obtain time series data on net primary productivity and sustainability metrics for soil carbon and other soil nutrients. Interagency Regional Feedstock Partnership development of a corn stover residue removal computer model also began, and a Geographic Information System team has also been established at the five SunGrant centers and will supply their area data for modeling and storage purposes.
2007	Met	--
Documentation: The prototype Vermeer BG480E electric bale grinder was used to evaluate the grinding capacity of a depot-scale system. The BG480E is a change in grinder platform from the HG6000 modeled in FY10's Joule Milestone Report.		

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Biomass and Biorefinery R&D
Website: http://www.eere.energy.gov/topics/biomass.html

Performance Goal: *Biomass - Feedstock Infrastructure*
Improve the sustainably harvestable yield in average dry matter (DM) tons per acre to support the development of a sustainable feedstock supply and enable the provision of a supply of biomass feedstocks sufficient for a growing bio-based industry
FY 2011 target: 1.3

Results:

FY	Target	Commentary
2011	Met	This summary of the previous three FY11 quarterly reports includes examination of the baseline scenario for crop residues (i.e., corn stover, wheat straw, etc.), which was established in the first quarter. In the second quarter, the impact of farmgate price on national production and yield was examined. An examination of the sensitivity of particular production parameters was completed in the third quarter. Taken together, these results indicate that average yields of 1.3 dry tons/acre/year are achievable at national production of up to about 104 million dry tons/year.

Documentation:

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Biomass and Biorefinery R&D
Website: http://www.eere.energy.gov/topics/biomass.html

Performance Goal: *Biomass - Platforms Research and Development - Sugars*
Reduce the modeled ethanol conversion cost, in $/gallon of ethanol (in $2007)
FY 2011 target: $0.97/gallon

Results:

FY	Target	Commentary
2011	Exceeded	The FY11 target was met by NREL through work completed in the Biochemical Process Integration, Biochemical Platform Analysis & Pretreatment and Enzymatic Hydrolysis tasks. Data generated by NREL researchers successfully demonstrated commensurate with the FY 2011 Joule/State of Technology target through core research improvements in pretreatment, enzymatic hydrolysis, and fermentation. Xylose yields in primary pretreatment remained the same as in FY 2009 and 2010, but the overall yield of monomeric xylose was increased to 88% by using advanced and accessory enzymes to convert unreacted xylan and xylooligomers. Improved fermentation performance observed at NREL using Z. mobilis strain A7 from DuPont, which has a higher ethanol tolerance limit than the 8b strain used in the past. At 17.5% (w/w) total solids loading in fermentation, xylose-to-ethanol yield was 85% of theoretical and arabinose conversion was 47%. Fermentation conversions were slightly lower at 20% solids, but the MESP was actually the same due to the effect of solids loading on capital costs. The resultant FY 2011 SOT MESP is $1.67/gal ethanol, with a corresponding Biochemical conversion cost of $1.05.
2010	Met	Data generated by NREL researchers and other external collaborators successfully demonstrated performance commensurate with the FY 2010 State of Technology MESP target of $1.98/gal ($1.33/gal conversion cost) (2007$) through core research improvements in pretreatment, enzymatic hydrolysis, and fermentation. The resultant FY 2010 SOT MESP is $1.94/gal ethanol, with $1.27/gal attributed to conversion costs.
2009	Met	"The FY 2009 Joule target of $0.12/lb sugar (2007$) was met through improvements in pretreatment and enzymatic hydrolysis technology. By using a lower-severity pretreatment in the horizontal reactor, followed by a secondary hydrolysis or oligomer hold step, the total conversion of xylan to xylose was improved to 79.6%, with a loss to furfural of 6.4%. These results were obtained in continuous operation at the pilot scale. Integrated washed-solids enzymatic hydrolysis experiments performed at the bench scale on the same pretreated corn stover generated by the pilot plant demonstrated a cellulose-to-glucose yield of 88%, as well as 78% conversion of residual xylan to xylose using an advanced enzyme preparation received in FY 2009. When these conversion improvements were input to the updated sugar model, the modeled sugar cost for FY 2009 was $0.1197/lb, clearly meeting the Joule target.
2008	Met	Bench scale experiments identified the best available cocktails of commercial enzymes for production of fermentable sugars from corn stover, with batch operations and relatively dilute systems. Modeling based on experimental results verified the cost target of $0.13 per pound of fermentable sugars (in 2007 dollars) was met. These results were achieved by a combination of dilute acid pretreatment at 180°C and various mixtures of enzymes.
2007	Met	Integrated tests of dilute acid pretreatment combined with ammonia conditioning followed by enzymatic hydrolysis and fermentation with existing organisms provided a modeled cost that met the Joule target of $0.125 per pound sugars. The results of this study are consistent with meeting the performance metrics needed to achieve a sugars cost of $0.064 per pound by 2012. Prices are reported in 2002 dollars.

Documentation: November Platforms R&D Biochem Report & Summary

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Solar Energy
Website: http://www.eere.energy.gov/topics/solar.html

Performance Goal: *Concentrated Solar Power (CSP)*
Reduce the levelized cost of solar electricity from CSP for utility applications
FY 2011 target: 14 - 16 cents per kilowatt-hour

Results:

FY	Target	Commentary
2011	Met	Molten-Salt Power Tower projected to have 11 c/kWh under same assumptions (wet-cooling, Phoenix labor, 30% ITC)
2010	Met	The modeled cost is $0.13/kWh even though R&D has improved trough efficiency from 15% to 15.5% during FY2010. This is a result of increased commodity costs - particularly nitrate salt, steel, and glass.
2009	Not Met	The National Renewable Energy Laboratory (NREL) performed a comprehensive cost analysis of a parabolic trough plant in 2009, which indicated that several cost factors were higher than previously expected. Most notably these included the header piping, heat transfer fluid inventory, the solar field itself, and the thermal storage system. Nitrate salt (the thermal storage media) prices have remained at historic highs, despite the economic slowdown in 2009. This resulted in a best modeled cost that exceeds the DOE Solar program FY 2009 target of 11-13 ¢/kWh by 1.5¢ in constant 2007 dollars.
2008	Met	Levelized cost of energy (LCOE) calculations are based on 2008 cost and performance projections for a 100 MW parabolic trough reference plant. These projections are used as inputs to the Solar Advisor Model, which generates financial and performance output metrics. The original Joule target was based on a 2006 dollar analysis, and the $2006 adjusted LCOE value for the plant is 11.6 ¢/kWh.
2007	Met	Initial plant performance data provided to NREL indicates that the plant is meeting the performance projections with a projected annual efficiency of 13.2% for the reference plant, which support the cost of energy goals. Improving the efficiencies of CSP trough collectors and receivers will improve the levelized cost of energy, thus improving the potential of Solar power to meet the program's goal of $0.05-0$.10/kWh by 2015.

Documentation: Contact Joseph.Bressler@ee.doe.gov for results from SAM model

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Solar Energy
Website: http://www.eere.energy.gov/topics/solar.html

Performance Goal: *Photovoltaic (PV) Energy Systems - Crystalline Silicon*
Reduce the levelized cost of solar electricity from photovoltaics for residential applications
FY 2011 target: 8 – 20 cents per kilowatt-hour

Results:

FY	Target	Commentary
2011	Met	Values represent CY 2010 NREL Residential benchmarks. Significant cost reductions occurred in the price of PV modules, from $1.95/W in September 2010, to $1.22/W in September 2011.
2010	Met	The expert elicitation of current residential photovoltaic system costs, as published in "Modeling the U.S. Rooftop Photovoltaics Market", are approx. $6/W, which is within the range of the of $0.15-0.22/kWh. (www.nrel.gov/docs/fy10osti/47823.pdf)
2009	Met	Funding from the DOE Solar Program has enabled companies within the Technology Pathway Partnerships program to manufacture proprietary cells, modules, and systems at lower costs. When combined with best practices system installation, a levelized cost of energy at or below $0.16/kWh is achievable.
2008	Met	DOE is supporting company-led, early-stage PV projects under the Solar America Initiative's "PV Incubator" funding opportunity. Calisolar, one of the companies selected, has the capability to produce photovoltaic cells at a cost under $1.00 per Watt by using less expensive, metallurgical grade silicon. This process enables certain manufacturers to produce modules at a cost of $1.70 per Watt or less.
2007	Met	Cross-cutting research focused on semiconductor material, device and processing issues had positive results, with a testing and validation of over 19% conversion efficiency for a SunPower solar panel. This work supports the President's Solar America Initiative which will reduce the cost of power from PV modules to less than $.10/kWh by 2015.

Documentation: Contact Joseph.Bressler@ee.doe.gov for validated results from SAM model

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Solar Energy
Website: http://www.eere.energy.gov/topics/solar.html

Performance Goal: *Photovoltaic Energy Systems - Thin-Film*
Reduce the levelized cost of solar electricity from photovoltaics for commercial applications
FY 2011 target: 8 - 20 cents per kilowatt-hour

Results:

FY	Target	Commentary
2011	Met	Values represent CY 2010 NREL Residential benchmarks. Significant cost reductions occurred in the price of PV modules, from $1.95/W in September 2010, to $1.22/W in September 2011.
2010	Met	The expert elicitation of current residential photovoltaic system costs, as published in "Modeling the U.S. Rooftop Photovoltaics Market", are approx. $4.5/W, which is within the range of the of $0.11-0.22/kWh. (www.nrel.gov/docs/fy10osti/47823.pdf)
2009	Met	Funding from the DOE Solar Program has enabled companies within the Technology Pathway Partnerships program to manufacture proprietary cells, modules, and systems at lower costs. When combined with best practices system installation, a levelized cost of energy at or below $0.20/kWh is achievable.
2008	Met	DOE provides funding to First Solar and other industry partners through the three-year subcontract ?Development of Robust High Efficiency Thin-Film CdTe PV Modules?. A long-term objective of this relationship is to demonstrate commercial, low-cost, and reproducible PV modules. First Solar's "Corporate Overview Q2 2008" report states a module cost of $1.12/W.
2007	Met	The thin film PV module 11.8% conversion efficiency was independently verified by NREL staff at the Outdoor Test Facilities in Golden, CO. Improving the efficiencies of PV module technology will improve the levelized cost of energy, thus improving the potential of Solar power to meet the program's goal of $0.05-0$.10/kWh by 2015.

Documentation: Contact Joseph.Bressler@ee.doe.gov for validated results from SAM model.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Solar Energy
Website: http://www.eere.energy.gov/topics/solar.html

Performance Goal: *Solar - Market Integration*
Reduce market barriers and support domestic market growth to enable 600 megawattd of solar installations in the United States

Results:

FY	Target	Commentary
2011	Exceeded	The Solar Energy Technologies Program assumed the CY Q3 2011 installations were 77 megawatts higher than CY Q2 2011 (391.3) based on internal market reporting, giving an installation total, from October 2010 - Sept. 2011 of ~1.3GW. The FY 2011 Target number (3GW) was reported for "Total grid-connected PV capacity, cumulative", not "per year". Therefore, assuming the above numbers, in conjunction with the cumulative installed capacity reported by GTM/SEIA in CY Q2 2011 of 2.6763GW, we arrive at a total installed capacity in the United States of ~3.1 gigawatts
2010	Not Met	--

Documentation: U.S. Solar Market Insight, 2nd Quarter 2011. GTM/SEIA. http://www.seia.org/galleries/pdf/SMI-Q2-2011-ES.pdf

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Solar Energy
Website: http://www.eere.energy.gov/topics/solar.html

Performance Goal: *Solar - Systems Integration*
Support achieving the vision goal of 15% of electricity demand from solar energy technologies by 2030 by providing enabling technologies for >5% annual solar energy penetration into two types of distribution feeder circuits

Results:

FY	Target	Commentary
2011	Met	The Solar program is currently working with many distributed systems that have penetrations higher than 5%, specifically our work with several awardees on the SEGIS and High Penetration Solar Deployment projects has produced results that meet or exceed this performance target.
2010	Met	Five awardees came out of Phase II. Only 4 of these were qualified to enter into Phase III.

Documentation: While we are working with many distributed systems that have penetrations higher than 5%, our work with PV Powered (now Advanced Energy) has an installation of PV on a feeder at this level through SEGIS as well as our work with NREL and Southern California Edison as part of our High Penetration Solar Deployment project.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Wind Energy
Website: http://www.eere.energy.gov/topics/wind.html

Performance Goal: *Wind - Distributed Wind Technology (DWT)*
Deploy new units of distributed wind turbines in the market
FY 2011 target: 5,369

Results:

FY	Target	Commentary
2011	Not Met	The goal is missed by just over 2,200 units and was impacted by the economic recession and the expiration of state policies that had strongly encouraged small wind in prior years (NJ & CA). U.S. market barriers such as zoning/permitting, increasing demand charges by utilities, hesitancy of public power entities to deviate for G&T guidance, and stable policy continue to slow potential growth. Average size is increasing to 8.4 kW (2010) vs. 4.4 kW (2007), which is another explanation for the reduced overall number of units deployed (more power from fewer units). This goal will be retired for FY 2013, since number of units is not best indicator of total impact of distributed wind deployment.
2010	Met	A total of 4,520 distributed wind turbines (1kW up to 1 MW rated power) were deployed in 2010 according to the report, "AWEA Small Wind Turbine Global Market Study 2009." This exceeds the 2009 goal by 930 units - 130 units beyond the 2010 incremental deployment goal of 800 units.
2009	Met	A total of 4,321 distributed wind turbines (1kW up to 1 MW rated power) were deployed in 2009 according to the report, "AWEA Small Wind Turbine Global Market Study 2009."
2008	Met	A total of 3,376 distributed wind turbines were deployed, exceeding the target of 500 new units deployed above the 2,400 unit baseline.
2007	Met	The work conducted in FY 2007 for Distributed Wind Technology which reached a cost of electricity of 9.9-10.7 cents/kWh, represented the completion of a 5 year effort to bring down the cost of electricity for residential and commercial size turbines based on cost of electricity. This will support the goal of expanding the market for distributed wind technologies five-fold from where it existed in 2007.

Documentation: NREL, 2011. Draft memorandum "DOE's FY2011 Distributed Wind Technology Annual Target." With data from AWEA 2010 Small Wind Market Report

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Wind Energy
Website: http://www.eere.energy.gov/topics/wind.html

Performance Goal: *Wind - Low Wind Speed Technology (LWST)*
Reduce the modeled land-based wind cost of energy, in cents per kWh, in Class 4 wind speed areas (7.25 m/s mean wind speed at 50m above ground) from a 2009 baseline of 8.0 cents/kWh (cents per kWh)
FY 2011 target: 7.9

Results:

FY	Target	Commentary
2011	Met	The modeled land-based turbine rotor diameter was increased from 77 meters to 82.5 meters to reflect the fact that rotor diameters in turbines installed 2010 were larger. This results in greater energy production/higher capacity factor, which drives down cost of energy. The cost impact of larger rotors is about 0.5 cents/kWh. The assumptions on financing costs were also changed, largely as a result of market factors outside the influence of DOE research.
2010	Not Met	This was a 5 year target that was changed in the fall of 2009. The supporting information from related activities is not of high enough quality to provide a full modeling run during FY 2010.
2009	Not Met	"As in previous years, the LWST Project COE reduction was quantified using the Annual Turbine Technology Update (ATTU) methodology. The results show that the LWST Project achieved a land-based COE of 4.02 cents (FY $2002) /KWh as a result of FY 2009 LWST Project activities. With the FY 2009 target ATTU land-based COE being 3.9 cents/KWh, the achieved ATTU COE falls short of the current year land-based target by 0.12 cents/KWh. While this represents a clear shortfall for the current fiscal year, the Wind Energy Program will implement an action plan to achieve the FY 2010 targets. Although LWST activities during FY 2009 made significant progress toward the program goal of offshore COE reduction, directly quantifiable data was not available to support verification of the offshore target.
2008	Not Met	Modeled cost of wind power in land-based Class 4 areas equaled 4.05 cents per kWh. Improved data incorporating experience gained in prototype testing led to higher-than-expected COE and the missed target. Modeled cost of wind power in shallow offshore Class 6 areas equaled 9.2 cents per kWh, meeting the target level.
2007	Met	DOE activities resulted in a wind cost of energy calculation of 3.8 cents, well ahead of the 4.1 cent target. The offshore wind targets for shallow (9.25 cents/kWh) and transitional wind (11.93 cents/kWh), which were met, are due to benefits realized from synergies with land-based technologies. R&D and technical studies undertaken under the Low Wind Speed and Supporting Research and Testing key activities have direct impact on the cost and performance of components, which in term directly lead to reduced cost of energy of wind systems for both land-based and offshore applications.

Documentation: NREL, 2011. FY11 Budget Analysis Assumptions Memo (draft) and Tegen, S.; Lantz, E.; Maples, B.; Smith, A.; Schwabe, P.; Hand, M. (forthcoming). 2010 Cost of Wind Energy Review. National Renewable Energy Laboratory.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Wind Energy
Website: http://www.eere.energy.gov/topics/wind.html

Performance Goal: *Wind - Technology Application*
Number of states with at least 1000 megawatts of wind energy installed
FY 2011 target: 14

Results:

FY	Target	Commentary
2011	Met	By FY11 end, 14 states had >1000MW wind, with TX having >10,000 MW installed. The states with >1GW are: TX, CA, OR, WA, WY, CO, KS, ND, MN, IA, IL, IN, NY, OK
2010	Not Met	The goal of 7 states with 1,000 MW installed wind capacity has been exceeded by 7 states for a total of 14 states. However, there are currently only 26 states (4 short of the 30 state goal) with at least 100 MW of installed wind capacity. The 1,000 MW state annual goals have been accelerated for FY 2011 and beyond. The 100 MW state goal is set to retire in FY 2012
2009	Not Met	The goal of 4 states with 1,000 MW installed wind capacity has been exceeded by 5 states. However, there are currently only 26 states (1 short of the 27 state go) with at least 100 MW of installed wind capacity
2008	Met	23 states now exceed 100 MW of installed wind power capacity. Wind Powering America has provided extensive support to several states that achieved the 100 MW level in 2008.
2007	Not Met	The Wind Program's Technology Acceptance activities to help prime the market to accept wind in increasing amounts supported 16 States installing at least 100 MW of wind by the end of FY 2007 (September 2007). However, with the rush to install new wind turbines, this target was actually exceeded by Calendar Year 2007 (December 2007). The activities help stakeholders and officials within States understand wind energy technologies and how wind can be integrated into their state energy systems will in turn reduce institutional and regulatory barriers, helping wind to contribute in a competitive wholesale electric market.

Documentation: See AWEA 2nd Quarter 2011 report for validated results: http://www.awea.org/learnabout/publications/reports/upload/2Q-2011-Public-Market-Report.pdf

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Wind Energy
Website: http://www.eere.energy.gov/topics/wind.html

Performance Goal: *Wind - Technology Viability/Offshore Wind*
Reduce the modeled shallow water cost of energy, in cents per kWh, in Class 6 wind speed areas (9.25 m/s mean wind speed at 50m above ground) from a 2009 baseline of 26.9 cents/kWh
FY 2011 target: 26.8

Results:

FY	Target	Commentary
2011	Exceeded	Offshore turbines still are not installed in the United States, so this is a modeled cost of energy (COE) based on data from proposed U.S. projects and existing European projects. Due to changes in economic conditions, the cost of project financing decreased in FY 2011 (cheaper debt) relative to FY 2010. The modeled turbine specifications did not change, but various cost elements were update to reflect new and better information.

Documentation: NREL, 2011. FY11 Budget Analysis Assumptions Memo (draft) and Tegen, S.; Lantz, E.; Maples, B.; Smith, A.; Schwabe, P.; Hand, M. (forthcoming). 2010 Cost of Wind Energy Review. National Renewable Energy Laboratory.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Geothermal Technologies
Website: http://www.eere.energy.gov/topics/geothermal.html

Performance Goal: *Geothermal - Enhanced Geothermal Systems*
Increase average total flow rate per production well in kilograms/second for EGS field site12

Results:

FY	Target	Commentary
2011	Not Met	In FY 2011 the Program conducted activities at multiple EGS field sites that made progress toward meeting this measure. At one particular site, a stimulation plan was carried out. This plan included an initial shear stimulation phase, followed by a controlled hydrofac phase with step-wise increase in injection pressures. Upon completion of these phases, the stimulation plan resulted in significant injectivity and injection flow rate increases. Despite these successes, the increase in flow rate per production well was not fully demonstrated. While not quantitatively validated, there are good indications that the measure could be met: 1) Tracers introduced at the injection well have been detected and quantified at the production well, demonstrating well conductivity. Full demonstration (and quantification) of enhanced productivity is possible when all wells are in full operation. 2) Theoretically, for a well managed geothermal field, production rates and injection rates be must equal or at least proportionate. More fluid cannot be produced than can be injected back into the subsurface. The Program has demonstrated an increase in injection flow rate, which means the reservoir will accommodate additional water intake. This increased water intake means more fluid can be produced. Moving forward, the Program will employ techniques in FY 2012 to quantify the production flow rate increase as of the stimulation technologies and plans used in FY 2011.

Documentation: Desert Peak EGS Report from the FY 2011 Program Peer Review

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Water Power
Website: http://www.eere.energy.gov/topics/water.html

Performance Goal: *Water - Generation and Flow Data*
Test marine and hydrokinetic devices and components to determine baseline cost, performance, and reliability

Results:

FY	Target	Commentary
2011	Met	2 MHK Devices (Free Flow Power (FFP) and Columbia Power Technologies (CPT)) are deployed and being tested in open water. FFP deployed and initiated testing of a 40 kW in-stream turbine in the Mississippi River in June 2011. CPT deployed and initiated testing on a wave energy converter in Puget Sound, WA, in March 2011.
2010	Met	The final draft of the National Hydropower Asset Assessment Project, which presents a new assessment of hydropower assets and a new integrated database constructed from available Federal and non-Federal sources to describe: (1) the current state of the hydropower infrastructure in the U.S. (age, type, ownership, etc.), (2) generation patterns from these assets, and (3) hydrologic conditions. The database was designed to integrate monthly hydrology and civil works information by river basin, for a period of at least the last 10 years. The database will be used to study patterns in generation variability, their causes, plus opportunities for upgrading hydropower facilities to stabilize and increase generation.

Documentation: For both FFP and CPT, test data is being used internally as input to DOE's reference model work and to the National Labs for analysis. FFP and CPT deployment and testing activities are documented in quarterly project reports to DOE. Steve Chalk presented at the RETECH 2011 conference in DC (hosted by ACORE) on the EERE Renewable Energy Programs, which included the deployments of these 2 technologies.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Water Power
Website: http://www.eere.energy.gov/topics/water.html

Performance Goal: *Water Power*
Complete feasibility studies at facilities to identify opportunities for efficiency and capacity upgrades, powering existing non-powered dams, and adding new pumped storage hydropower capacity.
FY 2011 target: 10

Results:

FY	Target	Commentary
2011	Not Met	This Project, through which the feasibility studies were to be completed, has been substantially rescoped to more effectively incorporate the stated needs of industry and to significantly reduce costs through an improved implementation and procurement strategy. These project changes, and a delay in the project timeline, will require a formal revision to this measure. As background, the HAP project was initiated in 2010, being managed under the auspices of ORNL. After a broad ORNL solicitation brought forth limited and unresponsive proposals in 2010, the Program took action to re-scope the Project to better meet the needs of industry in early 2011, leading to a significant delay in the implementation of the assessments (formerly referred to as "feasibility studies" as is stated in this measure). At the close of FY11, 2 "test case" assessments have been performed. As a result of the new HAP strategy, the Program will complete 40 assessments in FY 12, and a total of 75 assessments through FY 2013, putting us back on schedule to meet our FY 12 and FY 13 commitments. This improved strategy allows the Water Power Program to successfully meet the 2012 and 2013 performance targets while more effectively assessing the potential and technology needs to increase generation at existing hydroelectric facilities.
2010	Met	No Comments
2009	Met	The Program has completed a draft version of its Multi-Year Program Plan for 2009-2012. The Program drafted the MYPP using several resources including knowledge gained through interaction with National Laboratories, industry, and other key stakeholders. The document lays out the Program's long-term strategic technology development and market acceleration goals for both marine and hydrokinetic technologies and conventional hydropower. The Program has developed strategic pathways and technical approaches to reach these goals and overcome technical and market barriers. The MYPP allows the Program to reassess its strategy as new information becomes available, the results of R&D projects are analyzed, and as the market develops for these technologies.

Documentation: Demonstration Assessments Reports from USACE - Center Hill and Duke - Rhodiss Hydropower Plants have been submitted by Assessment Team.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Vehicle Technologies
Website: http://www1.eere.energy.gov/vehiclesandfuels/

Performance Goal: *Advanced Combustion Engine Research and Development*
Collect and analyze data from 15 million miles of on-road plug-in electric drive vehicles to determine impact on electricity grid and consumer charging behavior
FY 2011 target: 15 million

Results:

FY	Target	Commentary
2011	Exceeded	Testing includes: 430 PHEVs, representing 14 PHEV models and 5M test miles; 150 EREVs, representing 1 EREV model and 400k test miles; 50 HEVs, representing 19 HEV models and 6M test miles; 4,000 BEVs, representing 47 BEV models and 10M test miles; and 3,000 EVSEs.
2010	Met	In September, the Oak Ridge National Lab completed testing on a General Motors 1.9-L diesel engine equipped with an organic Rankine cycle. In the tests the engine demonstrated a 45.0 per cent brake thermal efficiency. The demonstration is the final milestone in the path to demonstrating the 2010 DOE FreedomCAR objectives of 45% BTE with Tier 2 Bin 5 emissions for light-duty engines. The work will be fully documented in ORNL?s annual report this fall.
2009	Met	The Oak Ridge National Lab demonstrated an engine efficiency of 44.1% using lab data and modeling. An organic Rankine cycle (ORC) was used to generate more than 2.9 kW of net electrical power from the exhaust heat of a General Motors 1.9-L diesel engine. The additional power raised the effective efficiency of the engine from 42.3% brake thermal efficiency (BTE) to a combined BTE of 44.1%.
2008	Met	The Oak Ridge National Laboratory has demonstrated in the laboratory a brake thermal efficiency (BTE) of 43% on a General Motors 1.9-L diesel engine (an interim milestone to demonstrating the 2010 objective of 45% BTE with Tier 2 Bin 5 emissions for light-duty engines). Advanced efficiency technologies investigated in FY 2008 include thermal energy recovery, electrification of auxiliary components, lubricants, and fuel properties. A progress review of heavy-duty engine R&D was completed and preparation for a future down-select from 4 to 2 contracts was made.
2007	Met	The program has been making steady, incremental progress on engine efficiency. In FY 2007 the efficiency of developmental engines improved from 41% to 42%. This achievement is an interim milestone in the path for achieving and demonstrating the 2010 DOE FreedomCAR goals of 45% combustion efficiency with Tier 2 Bin 5 emissions in light-duty engines. Compared to the FY 2002 baseline of 30% efficient gasoline engines, this will allow passenger vehicles to use clean diesel engines that offer a 50% improvement in fuel economy while simultaneously meeting stringent EPA emissions requirements for 2010.

Documentation: Reports and fact sheets at: http://avt.inl.gov

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Vehicle Technologies
Website: http://www1.eere.energy.gov/vehiclesandfuels/

Performance Goal: *Hybrid and Electric Propulsion/Advanced Power Electronics and Electric Motors R&D*
Reduce the cost of electric-drive technologies. Demonstrate through data, simulation and modeling an inverter/motor, when combined, of 1.1 kilowatts per kilogram, 2.7 kilowatts per liter, at a cost of $18 per kilowatt peak

Results:

FY	Target	Commentary
2011	Met	The Q4 Target Objective was met by the Oak Ridge National Laboratory (ORNL) in September 2011. Using test data, simulation, and modeling it was determined that using a number of advances in inverter and motor technology could yield a traction drive system with the following characteristics: 1.1 kW per kilogram, 2.7 kW per liter, at a cost of $18 per kW peak. The technology advances include the novel flux coupling motor, the current source inverter (CSI), integration of the two to eliminate the inductor in the CSI, and use of advanced power module packages.
2010	Met	Based upon test data gathered by General Motors from prototype inverter and motor units, the traction drive parameters of 1.1 kW/kg and 2.6 kW/L have been attained for a coolant temperature of 90°C. Using vendor quotes obtained by General Motors and standard automotive costing practices, the cost target of $19/kW has been achieved. This marks the completion of the year and will be documented in the Oak Ridge National Laboratory (ORNL) Monthly Status report for September 2010.
2009	Met	Design analysis by Oak Ridge National Lab (ORNL) of the flux coupling non-PM motor when combined with inverter analysis (Q2 Joule milestone), demonstrated an inverter/motor projected cost (modeled) of $19/kW peak at the design conditions.
2008	Met	The Oak Ridge National Laboratory has demonstrated in the laboratory a current source inverter for use in traction drive applications with an inherent boost capability of 3.45X, a reduction of motor voltage harmonic distortion of 90% and motor bearing leakage current by 90%, and a reduction in capacitor requirements from 2000uF to 195uF.
2007	Met	Test results for the new motor built in 2007 showed 1.3 kW/kg, 3.9 kW/L, and a cost of $9/kW. This milestone is a stepping stone to the 2010 FreedomCAR and 2010 hybrid electric systems progress goal of achieving an Electric Propulsion System with a 15 year life capable of delivering at least 55 kW for 18 seconds and 30 kW continuous at a systems cost of $12/kW peak. That level of performance and cost will enable broad penetration of hybrid technologies into the automotive market, resulting in significant improvements in fuel economy and greenhouse gas emissions.

Documentation: The completion of the PMM 4th quarter milestone and annual performance measures will be documented in the September 2011 ORNL monthly status report to DOE.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Vehicle Technologies
Website: http://www1.eere.energy.gov/vehiclesandfuels/

Performance Goal: *Hybrid Electric Systems (Energy Storage)*
Reduce the cost of energy storage for PHEVs to $700 per kilowatt-hour based on modeling assuming high-volume (100,000 units) production

Results:

FY	Target	Commentary
2011	Exceeded	The current cost estimates from DOE/USABC battery developers (Johnson Controls, A123Systems, and Compact Power/LG Chem) for a PHEV average $651 per kilowatthour of useable energy, not including warranty costs and profit, which would be negotiated between the battery company and their customer for a specific vehicle application. This battery cost projection is derived by the manufacturer using USABC's battery manufacturing cost model and is based on a production volume of at least 100,000 batteries per year, which represents full utilization of a small battery production plant. The total battery cost is derived by the developer for specific battery cell and module designs that meet DOE/USABC system performance targets.
2010	Met	The modeled production cost of a high-power, 25-kW passenger vehicle lithium-ion battery has been reduced to less than $500. The cost of the 25-kW lithium-ion battery depends on the battery chemistry used and the useable energy required. Manganese spinel (LMO) and lithium iron phosphate (LFP) positive electrodes offer the lowest battery costs for high-power hybrid electric vehicles because of proven high-rate capability and lower materials cost. The modeled cost of a 25-kW battery (with a useable energy of 150-Wh) using LMO positive and graphite negative electrodes is $403 per pack at a production rate of 500,000 packs per year.
2009	Not Met	Cost estimates from current DOE/USABC battery developers (Johnson Controls, A123Systems, and Compact Power/LG Chem) for a 25 kilowatt battery vary from $621 to $808, excluding life & warranty costs and profit. The battery cost projection was derived by each manufacturer using USABC's battery manufacturing cost model and production volumes of 100,000 to 175,000 batteries per year, which represents full utilization of a small battery production plant. The estimates are exclusive of cost benefits associated with the recently awarded battery manufacturing plants funded by the American Recovery and Reinvestment Act. The Johnson Controls (JCS) and Compact Power contracts have been completed. JCS will commercialize the lithium ion technology developed with DOE's support in 2009 and will likely be the first entry of lithium ion batteries into a production hybrid vehicle. The A123Systems high power battery contract will be completed in March 2010 and further cost reductions of their battery system are expected.
2008	Met	The projected cost for a 25 kilowatt battery is $621 for the Hybrid Electric Vehicle battery that was developed in the U.S. Advanced Battery Consortium battery development contract. This is expected to be the first entry of lithium ion batteries into a production vehicle.
2007	Met	R&D activity in FY 2007 reduced the projected cost of a 25 kW lithium-ion battery pack from $750 at the end of FY 2006 to $700 at the end of FY 2007. This accomplishment is an interim milestone in the path for achieving and demonstrating the 2010 DOE FreedomCAR goal of a $500, 25 kilowatt lithium ion battery for power assist hybrid applications. Reducing battery costs to that level will enable broad penetration of hybrid technologies into the automotive market, resulting in significant improvements in fuel economy and greenhouse gas emissions.

Documentation: Proprietary details of the designs and cost models are presented at Quarterly Progress Reviews.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Vehicle Technologies
Website: http://www1.eere.energy.gov/vehiclesandfuels/

Performance Goal: *Lightweight Materials Technology*
Validate (to within 10% uncertainty) the cost-effective reduction of the weight of passenger vehicle body and chassis systems by 50% with safety, performance, and recyclability comparable to 2002 vehicles

Results:

FY	Target	Commentary
2011	Met	The baseline for the cost model has been developed for the multi-material vehicle. A detailed cost model prepared by the Oak Ridge National Laboratory (ORNL) provides the baseline for weight reduction analyses in FY2012 - 2014. This model lays the foundation upon which the subsequent analyses will be compared for validation. Results are documented in a presentation for the VTP Merit Review prepared by the ORNL (May 2011). A summary of the report will be included in the Materials Technology annual report.
2010	Met	A detailed cost model prepared by the Oak Ridge National Laboratory (ORNL) indicates that the 50% weight reduction in the body and chassis was achieved. The weight reduction is cost effective at gasoline prices above $3/gallon; with carbon fiber @$5.00/lb; and Mg ingot @$1.75/lb.
2009	Met	A detailed cost model prepared by the Oak Ridge National Laboratory (ORNL) indicates that the 40% weight reduction in the body and chassis is achievable, but not cost-effective on a life-cycle basis at $1.90 per gallon of fuel. It would be cost effective at prices above $4/gallon.
2008	Met	The weight reduction and cost effectiveness were assessed based on the use of lightweight material options for body and chassis components under two plausible mid-size vehicle scenarios achieving reductions of 27-32%. Each scenario focused on a specific lightweight material option, i.e. aluminum or glass-fiber-reinforced polymer-matrix composites (FRPMC). The focus was on under-body systems, but additional chassis components were also selected for the glass-FRPMC scenario.
2007	Met	The Future Generation Passenger Compartment developed innovative designs for the components of a passenger compartment (seats, paneling, dashboard, passive safety systems, etc.), taking advantage of new materials such as high-strength steel and carbon-fiber wherever possible, that could reduce the weight of a passenger compartment by as much as 30%. When combined with the previously-developed technologies to reduce weight in other areas of a car, the 2007 passenger-compartment work will allow the weight of a body and chassis system as a whole to be reduced by at least 10%, which is an interim step toward achieving the FreedomCAR 2010 progress goal of simultaneous attainment of a 50% reduction in the weight of vehicle structures and subsystems, affordability, and the use of recyclable/renewable materials.

Documentation: A draft report was provided to DOE and a final report will be published in the Material Technology annual report

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Vehicle Technologies
Website: http://www1.eere.energy.gov/vehiclesandfuels/

Performance Goal: *Vehicles - Lightweight Materials Technology*
Demonstrate through modeling and laboratory data an 8% energy conversion efficiency from engine waste heat to electricity for a thermoelectric device

Results:

FY	Target	Commentary
2011	Met	Using laboratory results for the thermoelectric material and extrapolating to a larger difference in temperature, a figure of merit of ZT= .47 can be obtained. As shown on slide 17 of the GM presentation, this is equal to 8% efficiency.

Documentation: GM presentation at the 2010 DEER Conference validating ZT= .47 can be obtained.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Vehicle Technologies
Website: http://www1.eere.energy.gov/vehiclesandfuels/

Performance Goal: *Vehicles - Outreach, Deployment & Analysis*
Reduce the use of petroleum through the adoption of alternative fuel vehicles and infrastructure
FY 2011 target: 570 million gallons per year

Results:

FY	Target	Commentary
2011	Exceeded	600 million – Not a final number; data will be evaluated and published at the end of the FY 2012 year to allow time for data quality assurance and final reporting for the calendar year that is due in March 2012.

Documentation: Clean Cities Annual Metrics Report

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Building Technologies
Website: http://www.eere.energy.gov/topics/buildings.html

Performance Goal: *Buildings - Appliance Standards*
Complete proposals (includes unique product inclusions in NOPRS and Final Rules) to update appliance standards and test procedures and publish in the Federal Register (proposals/final rules)
FY 2011 target: 14/16

Results:

FY	Target	Commentary
2011	Exceeded	Issued 26 unique product proposals and 16 unique product final rules for standards and test procedures
2010	Met	Proposals for 17 Products: 1) Battery Chargers, 2) External Power Supplies, 3) Commercial Clothes Washers, 4) Small Motors, 5) Res. Water Heaters, 6) Direct Heating Equipment, 7) Pool Heaters, 8)Walk-In Coolers and Freezers, 9) Fluorescent Ballasts, 10) Clothes Dryers, 11) Room Air Conditioners, 12) Res. Refrigerators, 13) Furnaces, 14) Boilers, 15) Central Air Conditioners, 16) HID lamps, 17) Microwave Ovens. Final Rules for 10: 1) Commercial Clothes Washers, 2) Small Motors, 3) Metal Halide Ballasts, 4) Res. Water Heaters, 5) Heating Products, 6) Pool Heaters, 7) HID Lamps (determination, 8) Non-Class A External Power Supplies (determination), 9) Televisions (repeal), 10) Microwave Ovens (repeal)
2009	Met	"Completed energy conservation standard final rules for 9 products not including codification of prescribed standards: packaged terminal air conditioners and packaged terminal heat pumps (1), commercial refrigeration equipment (2), gas and electric ranges and ovens (3), microwave ovens (4), General Service Fluorescent lamps (5), Incandescent Reflector Lamps (6), Very large commercial package air conditioning and heating equipment (7), packaged boilers (8), and refrigerated beverage vending machines (9). Test procedure final rules were published for battery chargers and external power supplies (standby mode), small electric motors, and General Service Fluorescent, Incandescent Reflector, and General Service Incandescent Lamps. Proposals were completed for 15 products."
2008	Met	DOE completed 17 proposals to update appliance standards and test procedures, including the final rules for Packaged Terminal Air-Conditioners and Heat Pumps and Furnaces and Boilers.
2007	Not Met	DOE issued four final rules in FY 2007 which included standards required for support of EPACT 2005 (including ceiling fan light kits, test procedure for central air conditioners, and test procedures for consumer products and certain commercial and industrial equipment) as well as the Final Rule for distribution transformers. These rulemaking activities fulfill the schedule the Department laid out to clear the backlog of delayed standards actions while simultaneously implementing the new requirements of the Energy Policy Act of 2005. The furnace and boiler rule was published in November 2007.

Documentation: Published in the Federal Register

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Building Technologies
Website: http://www.eere.energy.gov/topics/buildings.html

Performance Goal: *Buildings - Commercial Buildings*
Complete Retrofit and New Commercial Buildings Case Studies (that achieve at least 30 and 50% increase, respectively, in energy efficiency relative to the ASHRAE 90.1-2004 benchmark) with five year or less payback. Annual targets are for an individual year, not cumulative (retrofit case study/new commercial case study)
FY 2011 target: 5/5

Results:

FY	Target	Commentary
2011	Exceeded	5 Retrofit and 6 New Commercial Buildings Case Studies completed.
2010	Met	A total of four technology packages as Technical Support Documents were completed by NREL and PNNL. They were 50% savings for Large Office (NREL), 50% savings for Large Hospital (NREL), 50% savings for Small Office (PNNL), and 50% savings for Quick Service Restaurant (PNNL)
2009	Met	Technical Support Documents published with energy savings of more than 50% for four commercial building types: general merchandise (retail), grocery stores, highway lodging, and medium offices.
2008	Met	Commercial Buildings completed 4 design technology packages -- 2 of which provided at least 30% energy savings (highway lodging, warehouse). The other 2 provide energy savings of at least 50% (grocery stores and medium-box retail).
2007	Met	This target was met by completing the analysis and documentation of the pathways and recommendations for achieving 30% energy savings through sets of technology design packages for K-12 schools in various U.S. climates. This supports progress towards the 2025 goal of commercial buildings that are 60 to 70% more energy efficient.

Documentation: Case Studies availlable upon request -- George.Tzortzis@ee.doe.gov

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Building Technologies
Website: http://www.eere.energy.gov/topics/buildings.html

Performance Goal: *Buildings - Residential Buildings*
Complete an energy savings measures package (ESMP) for new residential buildings at net zero financed cost to the homeowner for one major climate region

Results:

FY	Target	Commentary
2011	Exceeded	The Building America Program completed two reports. One report is for new home construction measures at 20% and 30% savings in over 30 locations across five major climate zones. The second report is for existing homes measures at 15% and 20% energy savings in over 30 locations across five climate zones. These reports will serve as key reference points to guide ongoing research aimed at reducing first costs and increasing energy savings.
2010	Met	This milestone has been successfully completed. Two design technology packages were developed for the hot humid climate region and the mixed humid climate region.
2009	Met	The 2009 Residential Milestone has been successfully completed. Design technology packages that achieve 40% savings relative to the BA benchmark at zero net cost to homeowners were completed for one climate (cold climate).
2008	Exceeded	The Residential Buildings research report for the 40% energy savings level in the Marine Climate and five detailed case study reports have been completed. The report documents that ten homes have been cost effectively built in five communities to meet the Buildilng Technologies Program success criteria.
2007	Met	Multiple case studies demonstrating successful achievement of 30% and 40% savings relative to the Building America research benchmark have been completed for the Hot humid and Hot/Mixed Humid climate regions (respectively). Achievement of this target moves the program closer to the program goal of homes that use net zero energy by 2020.

Documentation: Email George.Tzortzis@ee.doe.gov for additional information

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Building Technologies
Website: http://www.eere.energy.gov/topics/buildings.html

Performance Goal: *Buildings - Solid State Lighting*
Increase efficacy (measured in lumens per Watt (lm/W)) of "white light" SSL in a lab device (lm/w)
FY 2011 target: 123 lm/W

Results:

FY	Target	Commentary
2011	Exceeded	In September, Philips Lumileds Lighting Company successfully fabricated a prototype packaged, bright-white LED that delivers 149 lumen/Watt, exceeding the DOE's FY11 PMM milestone of 142 lumen/Watt. The package was based off the Rebel ES platform. The prototype LED package produces about 600 lumens with a correlated color temperature (CCT) of 3911K, and a color rendering index (CRI) of 65.
2010	Met	Recent market released LUXEON Rebel LED by Philips Lumileds with a single InGaN die and phosphor conversion shows high performance. The top bin LED has following characteristics: up to 139 lm/W and 138 lm at 350 mA with a forward voltage of the device is 2.83 V. The CCT is 5385 K. The color coordinates are: u = 0.2015 and v = 0.4877. The CRI of the device is 70. The performance gain partially results from chip level electrical injection efficiency improvement (Vf reduction) and optical extraction efficiency improvement which were funded by DOE Great White.
2009	Met	In September, Cree successfully fabricated a prototype cool white LED that delivers 117 lm/W at 350mA, exceeding DOE's FY 2009 Joule milestone of 110 lm/W. This achievement builds on the Cree EZBright® LED chip platform, developed in part with prior funding support from DOE. Based on a 1 millimeter-square chip, the new prototype LED produces white light with a correlated color temperature (CCT) of 6,450 K and a color rendering index (CRI) of 69.
2008	Met	Cree successfully created a prototype cool white light-emitting diode (LED) that delivers 107 lumen per Watt (lm/W) at 350mA. Based on a 1 millimeter-square chip, the new prototype LED produces white light with a correlated color temperature (CCT) of 5500K and a color rendering index (CRI) of 73. Integration of four of these prototype LEDs can produce luminous flux of more than 450 lumens.
2007	Met	Improvements in materials, circuitry, and heat transfer incorporated in a single package of higher efficacy raised the bar for light-emitting diode (LED) performance (a CREE, Inc. new cool white multi-chip LED array prototype demonstrated a luminous efficacy of 95 lm/W). By improving the performance of solid state lighting, the program moves closer to the goal of acheiving net zero energy use in homes by 2020 and in commercial buildings by 2025.

Documentation: Contact George.Tzortzis@ee.doe.gov for additional information.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Industrial Technologies
Website: http://www.eere.energy.gov/topics/industry.html

Performance Goal: *Industry - Emerging Technologies*
Commercialize two new industrial technologies in partnership with the most energy-intensive industries that improve energy efficiency of an industrial process or product by at least 10%

Results:

FY	Target	Commentary
2011	Met	One iron-making technology (Mesabi Nugget - ITmk3 Process) was commercialized with energy efficiency improvement meeting exceeding the 10 percent goal.
2010	Met	ITP-sponsored technology resulted in a commercial success - SeaMicro Inc. delivered its first commercial server in 2010 with a potential of 75% reduction in power use per unit of computation relative to a conventional server.
2009	Met	A total of three (3) new technologies were reported as commercialized.
2008	Met	Three technologies were commercialized in partnership with industry, they included: Plastics or Fibers from Bio-Based Polymers; a technology in the Chemicals industry, Improved Methods for the Production of Polyurethane Foam; and Process for Converting Waste Glass Fiber into a Concrete Additive. Each technology resulted in substantial energy savings ranging from 20% to over 90 percent.
2007	Met	A total of three new technologies were reported as commercialized including the Dilute Oxygen Combustion technology, the Cromer Cycle Air Conditioner technology, and the Lower-pH Copper Flotation Reagent System. These commercialized efficiency technologies support the goal of an 14.9% reduction in industrial energy intensity by 2015 (baseline 2002).

Documentation: Source of data: Presentation by H. Tanaka of Kobe Steel, Ltd., 25 October , 2007, Asia-Pacific Partnership on Clean Development and Climate, 4th Steel Workshop, Wollongong, Australia, "New Ironmaking Process for CO2 Reduction"

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Industrial Technologies
Website: http://www.eere.energy.gov/topics/industry.html

Performance Goal: *Industry - Unique Energy-Intensive Industrial Plants*
Achieve an estimated 100 trillion Btu energy savings from applying EERE technologies

Results:

FY	Target	Commentary
2011	Exceeded	A total of 2,456 unique energy-intensive plants in the US were impacted by program in FY 2011. This exceeds the goal of 600 plants annually. We have shown a total of 443 TBtu of persistent energy savings in FY2011. This has exceeded the goal of 100 TBtu annually.
2010	Met	A total of 2,197 unique energy-intensive plants in the US were impacted by program in FY 2010. This exceeds the goal of 600 plants. We have shown a total of 363 TBtu per year of persistent energy savings in FY2010. This has exceeded the yearly goal of 100 TBtu per year.
2009	Met	An additional 525 unique energy-intensive plants in the US applied EERE technologies and services in the fourth quarter of FY 2009. The program met and exceeded its JOULE target primarily due to activities under the Save Energy Now (SEN) and Industrial Assessment Centers (IAC).
2008	Met	1,407 unique plants newly using the Department energy technologies and services were able to reduce energy intensity in their plants. Estimated savings from adoption of more efficient technologies and practices are 106 trilion Btus.
2007	Met	More than 1380 unique energy intensive uniques plants in US applied EERE technologies and services in FY07, saving an estimate 125 trillion Btus. This supports the goal of an 14.9% reduction in industrial energy intensity by 2015 (baseline 2002).

Documentation: Contact Harvey.Wong@ee.doe.gov for additional information

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Federal Energy Management
Website: http://www1.eere.energy.gov/femp/

Performance Goal: *Federal Energy Management Program (FEMP) Contract Awards*
Save 50 trillion lifecycle Btu in federal facility energy use through alternative financing or technical assistance activities

Results:

FY	Target	Commentary
2011	Not Met	FY 2010 was an exceptional year for ESPCs with the expiration of one ESPC contract. FY 2011 was a rebuilding year for the ESPC pipeline. The National Defense Authorization Act (NDAA) of 2011 eases the process for ESCO selection, creating fertile ground for growing the ESPC program and increasing the number of federal ESPC projects in the pipeline.
2010	Met	Met
2009	Met	The cumulative FY 2009 lifecycle energy savings based on FEMP activities were 116.2 trillion Btu, which exceed the FY 2009 goal of 34.4 trillion Btu. Energy savings in the first quarter were 7.7 trillion Btu, 0.8 trillion Btu in the second quarter, 98.6 trillion Btu in the third quarter, and 9.0 trillion Btu in the fourth quarter. Contributing to the total energy savings over FY 2009 were 14 ESPC awards, fifteen UESC awards, three PPA awards, REC purchases in two quarters, and seven projects involving technical assistance. The ESPC at DOE's Savannah River Site was the single largest contributor (72.8 trillion Btu) to the total FY 2009 energy savings.
2008	Met	Activities yielded 49.2 trillion cumulative lifecycle Btu savings through the end of the year which should result in about a 0.7 percent annual reduction in energy intensity.
2007	Met	ESPC and UESC contract awards, technical assistance, and DOE retrofits resulted in 33.2 trillion Btu savings exceeding the target. This will help Federal agencies to reduce the energy intensity of their operations, increase the use of renewable energy, accelerate the protection and improvement of the environment, and increase our nation's energy security as required by EPACT 2005 and Executive Order 13423.

Documentation: Contact Hayes.Jones@ee.doe.gov for additional information

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: State Energy Program
Website: http://www1.eere.energy.gov/wip/sep.html

Performance Goal: *State Energy Program*
Achieve an average annual energy savings from DOE funded projects
FY 2011 target: 3.5 trillion Btu

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded annual target by 0.17 trillion Btu in 2011.
2010	Met	Expenditure of FY 2010 SEP allocation ($50M) should result in a savings of 10.95 trillion source BTUs (an estimated $78 million in annual energy cost savings) ORNL/CON-492 evaluates performance in PY 2002, using an 11:11 (non-federal:federal) leverage ratio. More appropriate leverage ratio for FY 2010 is 2:1.
2009	Met	Met quarterly and annual energy savings targets, based on applying ORNL impacts assessment methodology to STARS costing totals
2008	Met	Total Btu savings for year are 11.35 trillion source Btu (an estimated $60-70 million in annual energy cost savings).
2007	Met	The State Energy Program (SEP) met its target, achieving an annual energy savings of 12.364 trillion source Btus ($78 million in annual energy cost savings) with DOE funds. The energy saving target was established and achieved using a methodology developed by the ORNL in Estimating Energy and Cost Savings and Emissions Reductions for the State Energy Program Based on Enumeration Indicators Data (January 2003).

Documentation: 2005 ORNL Study (adjusted for inflation) available by contacting Joseph.Bressler@ee.doe.gov

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Efficiency and Renewable Energy
Program: Weatherization
Website: http://www1.eere.energy.gov/wip/

Performance Goal: *Weatherization Assistance Program*
Weatherize homes using DOE funds

Results:

FY	Target	Commentary
2011	Exceeded	348,040 homes weatherized (estimated based on 11 months of actual data). Note: includes homes weatherized with Recovery Act funds in 2011.
2010	Met	Met: FY10 production to date: 24,492 Q4 FY10 production to date: 84,965
2009	Not Met	95,821 were reported as weatherized to date. States have until December to report final numbers. We expect to exceed target.
2008	Met	Total of units weatherized is 94,487.
2007	Met	The Weatherization Assistance Program (WAP) supported the deployment of cost-effective energy efficiency improvements to low-income households by weatherizing 101,667 homes in FY 2007. Through helping low-income citizens reduce their energy bills by permanently increasing the energy efficiency of their homes. DOE provides funding to states, which manage the day-to-day operations of the program. Low-income families receive services from a network of about 970 local weatherization providers.

Documentation: 2005 ORNL Study (adjusted for inflation) available by contacting Joseph.Bressler@ee.doe.gov

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/technology-development/energy-storage

Performance Goal: *Energy Storage Program*
Identify mechanism of carbon addition in lead acid battery and establish storage baseline cost of $2,500 per kilowatt for grid-scale application

Results:

FY	Target	Commentary
2011	Met	A mechanism of carbon addition in lead acid battery was identified; complete batteries with prepared anodes were built and underwent cycling tests, followed by disassembly and mechanistic analysis which established a baseline for grid-scale application.
2010	Not Met	Data not available. Alternate milestone was also pursued and met. All project goals were achieved and all milestones were met on schedule. The FY10 target of showing that the Ultrabattery technology was capable of achieving four times the cycle-life of conventional VRLA batteries in a specific PV-hybrid cycling environment was easily met. Results to date indicate that the Ultrabattery technology is capable of achieving over six times greater cycle life than conventional VRLA technology. The secondary goals of this work were also achieved by defining operating parameters for using the Ultrabattery in PV-hybrid power systems. Full details will be available in the final report on the project.
2009	Met	This milestone was met. The kickoff meeting was held in the middle of the quarter. The system design was completed. Schematic drawings for the electrical distribution system; the layout and of the energy storage system in the prefabricated housing; and the configuration of system protection and data monitoring systems were provided. A detailed operations manual for the data logger was also provided. The installation of a 2.5 Megawatt (MW) system at Malverne Station will without doubt improve the performance of the system in this location. The fast response and stiff voltage regulation of the Flywheel Energy Storage System(FESS) will allow the trains to be operated with faster acceleration and less disruption than they are currently experiencing. Acceptable performance includes demonstrating that the FESS can deliver (discharge) or receive (charge) 2.5 MW for 15 seconds (for the 12-flywheel configuration), with a 15-flywheel configuration option that can achieve a 30-second discharge at 2.5 MW.
2008	Met	The best candidate electrolyte was determined to be the cerium chloride-DMSO-based system having an 8 Volt working range, significantly higher than the typical 2.6-2.8 Volt systems and with a corresponding 3 to 4 fold increase in energy density. All of the ionic liquids (IL) evaluated do exhibit higher working voltages, however they also exhibit significantly higher ionic resistance. Consequently, the systems provide higher energy, but with a reduced power capability that is problematic for many applications. The cerium chloride-DMSO based system with a dissolved lithium salt exhibits much lower resistance and does not suffer from this reduced power behavior. Interaction of this electrolyte system with a variety of electrode materials was also explored for a better understanding of the fundamental processes associated with the passivation process.
2007	Met	A preliminary report on the joint State projects with the California Energy Commission (CEC) and the New York State Energy Research and Development Authority (NYSERDA) has been completed. The 450kW energy storage device utilizing supercapacitor technology was commissioned September 19, 2007 at the Vermont facility of Distributed Energy Systems. The system will be installed at the Palmdale, CA water treatment plant microgrid as part of the CEC/DOE Energy Storage Collaboration. It will provide backup power and help balance generation by wind, hydro, and natural gas.

Documentation: Work will be performed at Sandia National Laboratories and quarterly reports will be published as draft SAND reports.

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/office-electricity-delivery-and-energy-reliability

Performance Goal: *Operations and Analysis/Infrastructure Security and Energy Restoration*
Complete a mitigation strategy document to enhance the security of the nation's energy infrastructure using the results of the 2010 pilot study of the energy system and its interdependencies in order to further enhance the reliability, survivability, and resiliency of energy system

Results:

FY	Target	Commentary
2011	Met	ISER continues to refine a criticality methodology for energy infrastructure. This methodology leverages new geospatial mapping and information capabilities that are being developed for FY12 and reflected in the FY12 performance metric. Infrastructure analysis of certain key geographic areas is an ongoing effort and will be used to inform current and future initiatives to mitigate threats to the sector.
2010	Met	Q4 milestone and end of year target were met. While the web-based, industry-wide survey pilot was implemented, ISER has revisited the methodology and determined a change to a more applicable capability to meet the mission demand is needed and in the process has targeted an additional 5% of the oil and natural gas industry and those industries that support the oil and natural gas industry.
2009	Met	OE has met the 2009 annual target. The office submitted a formal request to the Western Electricity Coordinating Council, WECC, to obtain electric transmission data for the western United States. WECC had received a similar request from the North American Electricity Reliability Corporation, NERC, and asked ISER to investigate obtaining the data directly from NERC. After several meetings with NERC it was determined that the data that they are requesting is at a higher level than the data that ISER needs to complete the real time transmission status displays in our current modeling platform, VERDE. As a result, ISER has resubmitted the request to WECC to obtain the data directly. The request is being prepared for presentation to the WECC board of directors for their consideration at an upcoming board meeting. The data from WECC will be combined with existing data feeds from the eastern interconnect and data feeds from the Electric Reliability Council of Texas, ERCOT. Together, these industry sources are capable of providing transmission status coverage that would enable the office to have comprehensive and near real time information as planned.

Documentation: Mitigation Strategy Report, analysis of energy infrastructure systems, inputs from industry through meetings and the web-based tool

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/office-electricity-delivery-and-energy-reliability

Performance Goal: *Operations and Analysis/Permitting, Siting and Analysis*
PSA will assist 30 states each year in designing and implementing state electricity policies, statutes, and regulations that facilitate the development of the electricity infrastructure needed to access clean energy resources. The mixture of states and state assistance will vary from year to year

Results:

FY	Target	Commentary
2011	Exceeded	PSA met the annual target by responding to at least thirty states for assistance.
2010	Met	PSA met all requirements for Q4 and the end of the year by hosting multiple webinars with the Western Electricity Coordinating Council (WECC) on July 27th and August 11th. Reporting was done western states' State-Provincial Steering Committee approved conceptual frameworks for three long-term futures it wishes to see modeled under RTEP: a High Demand-Side Management case, a High Load Growth case, and a Low Carbon case.
2009	Not Met	This is the second such study; the first was published on August 8, 2006. These studies are required triennially by section 1221(a) of the Energy Policy Act of 2005, and their purpose is to identify areas of the country that are experiencing chronic or persistent problems due to demand for transmission services that exceeds the safe carrying capacity of the areas' transmission networks.

Documentation: Entities can request technical assistance through various sources (i.e. phone calls to DOE, through Governor's offices or through National Labs); National Labs maintain a log documenting all requests.

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/technology/-development/smart-grid

Performance Goal: *Renewable and Distributed Systems Integration*
Demonstrate 10% peak load reduction or improvement in asset utilization on two feeder systems

Results:

FY	Target	Commentary
2011	Met	Based on monitoring and data collection, two project sites have successfully demonstrated at least 10 percent peak load reduction on their feeder systems and improved their asset utilization.
2010	Met	Milestone and end of year target met. Peak load reduction of 10% and improvement in asset utilization was demonstrated on two feeder systems. At the distribution feeder at ORNL, demonstrated and tested renewable penetration (at least 10%) impacts and evaluated benefits of inverter controls for mitigating A/C stall. On the Lanai Project managed by SNL and NREL, the PV system is providing 600kw and the CHP is providing approximately 800kW which is over 10% of the peak load between 4.5MW and 5MW. Storage that is being installed will add additional capabilities.
2009	Met	The goal to demonstrate a 5 percent peak load reduction on distribution feeders with the implementation of Distributed Energy (DE) and Smart Grid Technologies was accomplished. The distributed resources were installed and are available to supply electricity during peak load periods. Monitoring and data collection have been initiated and continue.
2008	Met	Nine projects were selected. Cooperative agreements have been awarded and are in place and the National Energy Technology Laboratory (NETL). NETL was responsible for awarding contracts and will manage those cooperative agreements.

Documentation: There are a number of projects (eight or more) that have a goal of greater than ten percent peak load reduction that are currently underway. All projects are fully funded and should be complete by 2015.
Recent project summaries exist for all of these projects. Quarterly reports submitted to NETL

Project summaries can be found at:
http://www.oe.energy.gov/events.htm#Smart_Grid_Program_Peer_Review or http://energy.gov/oe/information-center/library/peer-reviews

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/office-electricity-delivery-and-energy-reliability

Performance Goal: *Research and Development Program Efficiency Measure*
Maintain total Research and Development Program Direction costs in relation to total Research and Development costs of less than 12%

Results:

FY	Target	Commentary
2011	Met	Total Research and Development Program Direction costs in relation to total Research and Development costs were less than 12%
2010	Met	Maintained total Research and Development Program Direction costs at 4.77.% relative to total Research and Development programmatic costs.
2009	Met	The R&D division continued to achieve an efficiency measure below the 12% target level. While the 9.71% costed number is well below the 12% target, it does reflect an increase over FY 2008. At least in part, this is due to Recovery Act work that pre-dated the Recovery Act appropriation, yet was required to successfully launch the Recovery Act effort. OE is presently re-casting at least a portion of these funds, which should, in turn, reduce the FY 2009 overhead under the regular budget.
2008	Met	Year-end calculations indicates an overhead efficiency for OE R&D at 8.37%, below the 12% target.
2007	Met	At 7.73%, OE's efficiency measure was well within the 12% goal. This reflected OE's restricted use of program direction funds under the year-long continuing resolution. At the same time, the rise in the measure from 5.74% in FY 2006 was due to the maturing of the program, as well as more adequate program direction funding. The additional funding went to support services to enable improved planning, analysis and evaluation, as well as improved documentation of standard operating procedures.

Documentation: Records maintained in the Office of Electricity Delivery and Energy Reliability

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://www.sei.cmu.ede/smartgrid/tools/index.cfm or_http://www.sei.cmu.edu/library/abstracts/brochures/sgmm-2011.cfm

Performance Goal: *Smart Grid Research and Development - Smart Grid Clearing House*
Transition the fully developed Smart Grid Maturity Model (SGMM) to industry for global implementation of a measurement and verification process for smart grid advancements

Results:

FY	Target	Commentary
2011	Exceeded	Transition of the SGMM to global industry well underway, including use by 120 utilities in 21 countries. Partner program to train and certify industry experts to assist utilities in applying the SGMM deployed, with seven partner organizations and 34 trained SGMM Navigators. Interest from utilities and partner organizations continues to grow as SGMM increasingly perceived as industry standard planning and progress measurement framework.
2010	Met	Q4 milestone and annual target met. Virginia Tech launched the "beta" version of the Smart Grid Information Clearinghouse (SGIC) on July 7,2010 and concluded the "beta" version phase on 09/30/2010 with the launch of the "full version of the SGIC.

Documentation: Version 1.2 of the SGMM; SGMM Update 2011

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/office-electricity-delivery-and-energy-reliability

Performance Goal: *Transmission Reliability*
Demonstrate effectiveness of electro-mechanical grid stability alarm (analysis of characteristic power oscillations) implemented in 5 control centers

Results:

FY	Target	Commentary
2011	Not Met	The number of control centers was set up as 5 in a projected out-year target several years ago, and when the FY11 Target was firmed up, 2 control centers was specified by the Transmission Reliability program for the year. Prior to FY11 the Transmission Reliability program realized that the most prominent oscillation frequency in the West was the north/south oscillation between California and Washington, and the only one that had enough monitors (phasor measurement units) to analyze this frequency reliably. The first quarter milestone bore this out, and the two control centers (California Independent System Operator and Bonneville Power Administration) were chosen and carried through the year in the Transmission Reliability declared target, but was not changed from the 5 centers number in the official documents OE is reporting into.
2010	Met	CETR met the annual target to 'Demonstrate a grid stability prototype alarm tool'. CETR has developed the specifications and design for a grid stability prototype alarm tool that is based on phase angle based operating limits. This prototype alarm tool is embedded in the Real Time Dynamics Monitoring System (RTDMS) Version 7.0. This prototype tool will be released on Sept 30, 2010 for industry demonstration and evaluation.
2009	Met	OE met its annual performance target. The development of a new Real Time Dynamics Monitoring System (RTDMS) release incorporating new angle stability monitoring displays has been completed and is presently undergoing field trials at selected utilities/organizations within the Eastern Interconnection power system. This modified prototype visualization tool will be released to the broader North American SynchroPhasor Initiative (NASPI) community for industry evaluation in 4th Quarter Fiscal Year 2009.
2008	Met	The Area Interchange Error (AIE) visualization system has been completed and delivered to NERC, and they have accepted the system. The NERC Board of Trustees Technology Committee (BOTTC) has reviewed and approved including the AIE tool as part of NERC Mission Critical applications. NERC Information Technology (IT) Group is now supporting and maintaining the AIE tool.
2007	Met	The plan was completed with regards to the transition of leadership of the North American SynchroPhasor Initiative (NASPI) from the Department of Energy to the North American Electric Reliability Corporation (NERC) with respect to deploying the synchrophasor network in North America. DOE will shift its focus to longer range research and development on applications that use the data from this network, and NERC, as the new Electricity Reliability Organization (ERO), will oversee expansion of the network itself, which can monitor compliance with the ERO mandatory grid reliability standards.

Documentation: The work on the oscillation tool by Montana Tech is reported on the following web site:
eere-pmc@go.doe.gov
Project Title: Load Control System Reliability
Recipient: Montana Tech

Strategic Goal: 1: Transforming our Energy Systems
Office: Electricity Delivery and Energy Reliability
Program: Electricity Delivery and Energy Reliability
Website: http://energy.gov/oe/office-electricity-delivery-and-energy-reliability

Performance Goal: *Visualization and Controls - Cyber Security*
Test and assess 2 control systems most widely used in the energy sector

Results:

FY	Target	Commentary
2011	Exceeded	Idaho National Laboratory (INL) - National Supervisory Control and Data Acquisition (SCADA) Test Bed (NSTB) Project team funded by DOE-OE CEDS Program has completed 1 cybersecurity assessment for one of North America's major energy delivery control system vendors. The DOE-OE CEDS-funded Source Code Analysis and Conformance Testing SCALe Project led by the Software Engineering Institute, Carnegie Mellon University (SEI-CMU) has completed assessments on two energy-sector vendor control systems to assess conformance with secure coding standards.
2010	Met	Target and Q4 milestone met. Security Audit files complete for 3 control systems including Siemens, Televent, and Areva. Testing is complete for Cisco system.
2009	Exceeded	DOE completed cyber security assessments of 11 SCADA/EMS systems in a test bed environment. These systems are used mainly for applications in the U.S. electric power grid. DOE identified numerous vulnerabilities and developed recommendations for mitigation. As a result, vendors developed "next generation" systems with enhanced cybersecurity features. Utilities have deployed 6 of these "next generation" systems which will reduce the risk of energy disruptions due to cyber attacks on control systems.

Documentation: In the INL FY11 Annual Operating Plan, which is in pre-approval status, there are plans to conduct an assessment of at least 1 control system used in the energy sector. This will be cost shared by industry which should help ensure success.

In addition, Digital Bond, which has successfully prepared security audit files in the past, will be developing security audit files to allow the testing and assessment for Control Microsystems and/or SISCO. This is part of contract DE-FC26-07NT43312.

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: New Nuclear Generation Technologies
Website: http://www.nuclear.energy.gov/fuelcycle/nefuelcycle.html

Performance Goal: *Fuel Cycle Research and Development*
Demonstrate progress toward the long-term mission to develop options to the current commercial fuel cycle management strategy by establishing long-term strategic plans for the program, identifying gaps in knowledge and uncertainties to resolve, and beginning the path to achieve the program's grand challenge goals

Results:

FY	Target	Commentary
2011	Met	This year's work produced major accomplishments related to system analysis, nuclear fuel testing, separation processes, waste forms, used fuel disposition, safeguard instrumentation development, modeling and simulation, and nuclear data. The advanced modeling and simulation campaign was focused to support advanced reactors and fuels. The wide range of research areas required the implementation of a strong technical coordination role, more independent review groups, and closer coordination with other DOE R&D programs, especially advanced reactors and nuclear material control and safeguards.
2010	Met	In FY 2010, the program made progress in developing long-term strategic plans for the program, identifying gaps in knowledge, and beginning the path to achieve grand challenge goals associated with the nuclear fuel cycle. The program's draft Summary of Accomplishments for FY 2010 report discusses the many research accomplishments in the development of fuel cycle technologies in FY 2010. The program revised their strategic Campaign Implementation Plans to identify the progress required to achieve the long-term mission of the program.
2009	Met	In FY 2009, the Office of Fuel Cycle Research and Development (FCR&D) met its annual target by conducting R&D in used fuel separations, transmutation fuels, and fast reactors. Results and activities for FY 2009 are documented in a report titled: Fuel Cycle Research and Development Summary of Accomplishments for Fiscal Year 2009. The report discusses FY 2009 research accomplishments associated with the major elements of the FCR&D program including: transmutation fuels development; separations and waste forms development; transmutation systems; materials protection; accountability and control technology development; advanced modeling and simulation; and systems analysis.
2008	Met	In FY 2008, the program met its annual target by completing the ?Global Nuclear Energy Partnership Technology Roadmap Phase 1? which provides technology readiness and risks, the state of technology development achieved to date, future research and development, and economic evaluations needed to evaluate and realize potential recycle options. This report is supported by the results of previous fuel cycle research and development activities in the areas of spent fuel separations, advanced recycling reactor; transmutation fuel and related fabrication processes; safeguards and waste forms.
2007	Met	In FY 2007, the program met its annual target through the completion of key advanced fuel cycle R&D activities in the areas of spent fuel separations and fast reactor fuel fabrication, as well as through facility design activities for the Consolidated Fuel Treatment Center, Advanced Burner Reactor and Advanced Fuel Cycle Facility. The successful completion of these activities significantly adds to the Department?s body of knowledge on advanced fuel cycle technologies that will help inform a Secretarial determination on the need for a second geologic repository for spent nuclear fuel, as well as a path forward for the Global Nuclear Energy Partnership in June 2008.

Documentation: Monthly program reports and documentation validating specific milestones; Program Manager Performance Certification Memorandum.

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: New Nuclear Generation Technologies
Website: http://www.nuclear.energy.gov/lwrsp/overview.html

Performance Goal: *Light Water Reactor Sustainability*
Develop the scientific knowledge to extend existing nuclear plant operating life beyond the current 60 year limit and ensure their long term reliability, productivity, safety, and security by conducting R&D activities in partnership with national laboratories, industry, universities, and international partners

Results:

FY	Target	Commentary
2011	Met	NE made substantial progress in support of extending the operating life of existing nuclear power plants. There was a significant increase in research conducted in FY 2011 with all 57 scheduled deliverables completed by the end of the year. Significant research results include the completion of enhanced concrete and cable inspections at the Ginna nuclear power plant; a detailed assessment of the experiments needed to understand irradiation-assisted stress corrosion cracking; the initiation of three instrumentation-and-controls-related pilot plant projects; the delivery of an initial test version of the next generation safety analysis code, R7; and the irradiation of silicon carbide cladding samples at the High Flux Isotope Reactor.
2010	Met	Substantial progress was made in establishing the base of scientific knowledge to extend the operating life of existing commercial nuclear power plants. In FY 2010, research and development activities conducted by national laboratories, industry, universities and international partners was expanded. Additional knowledge was gained and documented through various projects.

Documentation: Monthly program reports and documentation validating specific milestones; Program Manager Performance Certification Memorandum.

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: New Nuclear Generation Technologies
Website: http://www.nuclear.energy.gov/advmodelingsimulation/casl.html

Performance Goal: *Modeling and Simulation Hub*
Using high performance computers, create a prototype of a virtual reactor for predictive simulation of Light Water Reactors by 2015

Results:

FY	Target	Commentary
2011	Met	The Hub is doing very well and is adhering to management plans as described in their proposal. The recently completed annual review of the Hub had no major finding or recommendations for changes to the current scope or structure of the Hub. The Hub is well positioned to make significant progress on the issues of CRUD and grid-to-rod fretting in FY 2012 and FY 2013, respectively.

Documentation: Monthly program reports and documentation validating specific milestones; Program Manager Performance Certification Memorandum.

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: New Nuclear Generation Technologies
Website: http://www.nuclear.energy.gov/geniv/negeniv1.html

Performance Goal: *Next Generation Nuclear Plant Activities*
Determine a path forward for the design and construction of a next generation nuclear power plant in 2011 by partnering with private industry on the development of NGNP, performing environmental assessment activities, and continuing with the research, analysis, design, and licensing activities to establish the basis for determining whether the project should continue to Phase 2

Results:

FY	Target	Commentary
2011	Met	All milestones were met ahead of schedule. Successful milestone completion works towards reducing NGNP project risk and increasing private sector involvement. The crack growth system and AGC-1 "ready to insert" milestones demonstrate significant progress towards the qualification of high temperature metals and new grades of graphite for use in the extreme environments of a High Temperature Gas-cooled Reactor. Submission the Emergency Planning Zone white paper began the dialogue with the Nuclear Regulatory Commission (NRC) on the establishment of emergency planning actions and industrial siting criteria which is essential for coupling NGNP to industrial applications. In addition, the Nuclear Energy Advisory Committee (NEAC) Review of the NGNP first project phase was completed.
2010	Met	All program milestones were met and deliverables were completed and submitted to the Department for review. The program is positioned to meet all Phase I Energy Policy Act of 2005 deliverables on schedule. The Nuclear Energy Advisory Committee (NEAC) review of NGNP and recommendation to the Secretary of Energy concerning whether NGNP is ready to proceed to Phase II will end in May 2001. The Secretary's decision is scheduled for August 2011.
2009	Met	The NGNP Conceptual Design Funding Opportunity Announcement (FOA) was successfully issued in the fourth quarter. All program milestones were met and deliverables were completed on schedule and submitted to the Department of Energy (DOE) for review. The FOA will facilitate the extension of the application of nuclear energy into the broader industrial and transportation sectors, reducing fuel use and pollution and improving on the inherent safety of existing commercial light water reactor technology.
2008	Met	In FY 2008, Generation IV met its annual performance measure through a number of research, design and regulatory activities, including submission of the Next Generation Nuclear Plant (NGNP) Licensing Strategy, prepared jointly by DOE and the Nuclear Regulatory Commission (NRC), to Congress in August 2008. In addition, the program completed NGNP conceptual design technology selection studies and evaluated alternatives for entering into formal cost-sharing partnerships with industry. The program also made significant progress in fuels, graphite, and high temperature materials research and development in support of the NGNP.
2007	Met	In FY 2007, Generation IV met its annual performance measure through a number of research, design and regulatory activities, including the issuance of a Pre-Conceptual Design Report that establishes preliminary functional and operational design requirements for the Next Generation Nuclear Plant (NGNP). Successful experimental activities included operational testing of the Graphite Creep Test capsule and fuels irradiations that began in December 2006. These activities significantly contribute to the program?s 2011 selection of functional and operational design requirements of the NGNP in accordance with the Energy Policy Act of 2005.

Documentation: Monthly program reports and documentation validating specific milestones; Program Manager Performance Certification Memorandum.

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: New Nuclear Generation Technologies
Website: www.nuclear.energy.gov

Performance Goal: *Total NE Administrative Overhead Costs*
Maintain total administrative overhead costs in relation to total R&D program costs of less than 8%

Results:

FY	Target	Commentary
2011	Met	The Office of Nuclear Energy met its goal and kept total administrative overhead costs in relation to total R&D program costs at less than 8% FY 2011. Effectively controlling overhead costs is important to the Office of Nuclear Energy.
2010	Met	For FY 2010, the Office of Nuclear Energy maintained a total administrative overhead cost efficiency of 6.20%, in relation to total R&D program costs. Achievement of the annual milestone shows that R&D program management costs are being effectively controlled.
2009	Met	For FY 2009, the Office of Nuclear Energy maintained a total administrative overhead cost efficiency of 7.83% in relation to total R&D program costs, which is under the annual target of 8%. Achievement of the annual target shows that R&D program management costs are being effectively controlled.
2008	Met	For FY 2008, the Office of Nuclear Energy maintained a total administrative overhead cost efficiency of 6.51%, in relation to total R&D program costs. Achievement of the annual target shows that R&D program management costs are being effectively controlled.
2007	Met	For FY 2007, the Office of Nuclear Energy maintained a total administrative overhead cost efficiency of 7.97%, in relation to total R&D program costs. chievement of the annual target shows that R&D program management costs are being effectively controlled.

Documentation: Quarterly Measure Calculation; Program Manager Performance Certification Memorandum.

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: National Nuclear Infrastructure
Website: http://www.nuclear.energy.gov/facilitiesmanagement/nefacmgmtoverview.html

Performance Goal: *Cost and Schedule Baseline Variance*
Execute general plant and construction projects within approved cost profiles and schedules, as measured by the total percentages of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15 (using earned value measurement systems for GPPs and other program defined maintenance and upgrade projects)

Results:

FY	Target	Commentary
2011	Met	NE exceeded the goal of having at least 80% of its projects meeting the Schedule Performance Index (SPI) and Cost Performance Index (CPI) targets. By the end of FY 2011, 100% (four out of four) projects had met the index targets.
2010	Met	75 percent (three out of four) of General Plant Projects met the 0.9 to 1.15 Schedule Performance Index (SPI) and the Cost Performance Index (CPI) targets. The Special Nuclear Material Glovebox Project did not meet the SPI and CPI targets. Based on the subcontractor's corrective actions, the estimated delivery of the glovebox can still be completed within the current project schedule baseline. Other project management corrective actions ongoing to date include advanced project planning to improve project definition and cost estimate maturity before a performance baseline is established.
2009	Met	The Idaho Facilities Management program achieved an overall year-end earned value of 8.84% behind schedule and 4.32% under cost. The overall values included a substantial amount of level-of-effort scope and were within the target variance range. The project performance sub-set of the IFM program, however, was found to be 12.3% behind schedule and 7.32% under budget and reflect individual values that have a high degree of variation in project performance. Specifically, 13 of 25 projects underway at the close of FY 2009 exceed the earned value variance target for both cost and schedule. These project performance values support program conclusions that concerns exist in IFM project planning. The program also found weaknesses in project execution contributing to these performance levels. Planning processes developed for FY 2010 execution and out-year planning are expected to address these weaknesses.
2008	Met	For FY 2008, the program met its target by achieving cumulative cost and schedule variances at Idaho National Laboratory of less than 10%. The cumulative cost variance (CV) was + 3.5 percent and the schedule variance (SV) was -4.8%. Monitoring performance against established baselines helps managers achieve desired program results consistent with NE?s budget execution strategy, and provides early identification of possible problems in budget execution.
2007	Met	For FY 2007, the program met its target by achieving cumulative cost and schedule variances at Idaho National Laboratory of less than 10%. The cumulative cost variance (CV) was + 3.2% percent and the schedule variance (SV) was - 4.4% percent. Monitoring performance against established baselines helps managers achieve desired program results consistent with NE?s budget execution strategy, and provides early identification of possible problems in program execution.

Documentation: Monthly IFM Project Management Reports; Program Manager Performance Certification Memorandum

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: National Nuclear Infrastructure
Website: http://www.nuclear.energy.gov/facilitiesmanagement/nefacmgmtoverview.html

Performance Goal: *Facility Availability - Idaho Facilities Management Program*
Enable nuclear research and development activities by providing operational facilities and capabilities, as measured by operational availability percentages

Results:

FY	Target	Commentary
2011	Not Met	NE did not meet its goal of maintaining IFM facilities at 80% available. INL's Materials and Fuels Complex was 80.4% available, which met the goal. However, the Advanced Test Reactor (ATR), INL's preeminent research capability, was 71.6% available. The primary reason for the ATR not being available for 28.4% of the time was the continued equipment reliability issues plaguing the ATR. Several equipment reliability issues resulted in decreased availability.
2010	Met	The facility availability for all facilities was well above the established goal of 75% availability for FY 2010. Improved availability of the Idaho National Laboratory facilities, and their associated capabilities is critical to helping NE achieve the progress necessary to meet our nation's energy challenges.

Documentation: Monthly IFM Project Management Reports; Program Manager Performance Certification Memorandum

Strategic Goal: 1: Transforming our Energy Systems
Office: Nuclear Energy
Program: National Nuclear Infrastructure
Website: http://www.nuclear.energy.gov/space/nespace2a.html

Performance Goal: *Facility Operability Index - RAD (Space and Defense)*
Ensure unique nuclear facilities are available to support critical Departmental missions, maintain a facility operability index of 0.9 for key Radiological Facilities Management program facilities

Results:

FY	Target	Commentary
2011	Met	The program met its target of a Facility Operability Index of 0.9 for its facilities at INL, LANL, and ORNL. The program conducted improvements to some facilities. ORNL initiated upgrades to equipment in support of carbon-bonded-carbon fiber production and the planned outage of the E-beam welder for routine cleaning. INL is developing operating instructions for the multi-purpose glovebox and is finishing installation of the thermal vacuum chamber upgrades. These upgrades will help ensure that nuclear facilities continue to be available to support critical Departmental missions.
2010	Met	For FY 2010, the Space and Defense program achieved an overall Facility Operability Index of greater than 0.9. The program has demonstrated the ability to produce and fuel the General Purpose Heat Source Module using all of the facilities it maintains. This is a critical function in maintaining the national capability to produce long life power supplies for space and national security missions.

Documentation: Periodic Performance Reports; Program Manager Performance Certification Memorandum

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Advance Turbines*
Demonstrate a hydrogen fueled combined cycle gas turbine (previously fueled with syngas) and maintain the same efficiency performance improvement realized in 2010 (2-3 percentage points)

Results:

FY	Target	Commentary
2011	Met	Two large hydrogen turbine industry team projects met all four of the FY 2011 GPRA quarterly milestones for development of critical components. Key requirements for developing gas turbines with increased efficiencies and lower NOx emissions include the optimization of hydrogen combustion systems and the corresponding emissions control. Advanced material systems for turbine components subjected to the high temperature gas path and the corresponding aerodynamic validation of advanced aerodynamic designs are also necessary strategies to reduce the cooling air requirements while advancing turbine efficiencies. Meeting this annual target directly supports DOE-FE goal 1.2.11 by specifically addressing performance measures identified in Objective 3 for the Fossil Energy Coal and Power program.
2010	Met	A key requirement for developing gas turbines with higher efficiency and a lower cost-of-electricity is the optimization of material systems for turbine components subjected to the high temperature turbine gas path and the corresponding cooling effectiveness strategies to reduce the cooling air requirements. The two large industry team hydrogen turbine projects in the development of these critical components is demonstrated in large part by meeting all four of the FY 2010 GPRA quarterly milestones.
2009	Met	A key requirement for developing turbines for coal based power systems that minimize the emissions of carbon dioxide is the optimization of the turbine components subjected to the high temperature turbine gas path. In FY 2009 the large industry team hydrogen turbine projects made excellent progress in the development of these critical components as demonstrated by meeting the FY 2009 quarterly milestones. By advancing the state of the art in these areas, the gas turbine team members have continued to strive towards turbine temperatures high enough to attain projected efficiency increases. The efficiency increases and the aerodynamic and mechanical improvements anticipated from this work will allow turbines to be built that are more efficient, have higher power output, lower emissions and cost less ($/kW). These turbines will allow coal based IGCC power plants, with carbon capture and storage (CCS), to be deployed with a lower cost of electricity. Meeting this annual target directly supports DOE-FE FY 2010 goal of developing technologies that can produce electricity from coal at 45-50% efficiency based on higher heating value (HHV) at a capital cost of $1760/kW (in 2007 dollars).
2008	Met	A key requirement for developing turbines for coal based power systems that minimize the emissions of carbon dioxide is high temperature, stable and low NOx combustion of hydrogen fuels. In FY 2008, the GE and Siemens hydrogen turbine projects made excellent progress in the area of hydrogen combustion through a full range of testing, including a full head-end combustor test. This was demonstrated in large part by meeting all four of the FY 2008 GPRA quarterly milestones. Results from these tests demonstrated that low single digit NOx emissions at combustion temperatures high enough to attain projected efficiency increases are possible. This efficiency increase and the aerodynamic and mechanical improvement anticipated in third stage turbine blades will allow turbines to be built that are more efficient, have higher power output, lower emissions and cost less ($/kW). These turbines will allow coal based integrated gasification combined cycle power plants, which minimize the emissions of carbon dioxide, to be deployed with a lower cost of electricity.

2007	Met	Annual Accomplishment Met. The conceptual prototype combustor module testing being conducted under Phase I of the hydrogen turbine development project was completed on September 30, 2007. The test demonstrated that single digit NOx emissions were demonstrated at lower firing temperatures (2100°F versus design inlet temperature of 2500°F). The two most promising low NOx, high-hydrogen fueled, combustion concepts that offer the highest probability of meeting the efficiency, emissions, and cost goals of the turbine program are a lean (fuel & air) pre-mix concept and a lean dilute diffusion concept.
Documentation: Both industry team partners have submitted letters detailing their quarterly milestone accomplishments. They have also presented the milestone results at quarterly meetings and further details are included in the quarterly technical progress reports. Documentation is stored in M1.		

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Carbon Sequestration - Net Cost*
Conduct laboratory tests through pilot-scale tests of advanced pre-combustion capture technologies that show, through engineering and systems analyses studies, continued achievement toward the goal of 90 percent CO2 capture at no more than a 14-percent increase in cost of electricity

Results:

FY	Target	Commentary
2011	Met	Preliminary Analysis reported that systems engineering studies have shown that when incorporated into the IGCC with 90% carbon capture and storage, technology advancements in the Advanced Power System and Sequestration Programs result in a cost of electricity increase of 14% relative to the reference non-capture IGCC. By meeting the annual target for advanced capture and sequestration from power plants and other energy plants, the pre-combustion capture activities are developing economical ways to validate technology improvements of an advanced power plant with carbon capture technology. Achievement of the target will also help to support FE goals by reducing the cost of CCS for existing and future fossil fuel power generating facilities and provide protocols for pre-combustion CO2 capture technologies.
2010	Met	Preliminary systems engineering studies have shown that when incorporated into the IGCC with 90% carbon capture and storage, technology advancements in the Advanced Power System and Sequestration Programs result in a cost of electricity increase of 15% relative to the reference non-capture IGCC. In addition, each of the quarterly milestones contributed to meeting the annual target by developing technologies that can be integrated into the power system to reduce the costs of electricity from capture. In FY10, nine new pre-combustion projects were selected that will address pre-combustion CO2 capture technologies capable of validating technology improvements of an advanced power plant with CO2 capture technology. These projects are focusing on high-temperature, high-pressure membranes; high-efficiency solvents; solid sorbents with commercially relevant separation capacity and regenerability; and advanced separation devices for separating CO2 or hydrogen (H2) from shifted syngas and novel approaches for pre-combustion removal and capture of the carbon content of fuels for storage. By meeting the annual target for advanced capture and sequestration from power plants and other energy plants, the pre-combustion capture activities are developing economical ways to validate technology improvements of an advanced power plant with carbon capture technology. The construction of the Dispersed Bubble Reactor (DBR) system (NCCC) will allow evaluation of higher pressure regeneration at moderate temperatures, which can reduce CO2 compression capital costs and corresponding energy requirements. In addition, higher loadings expected with the DBR system can reduce the amount of solvent required. Completion of the milestone to prepare a list of experimentally characterized ionic liquid candidates for development as high temperature solvents (NETL) contributes to meeting the annual target of a 15% net cost of CO2 capture and separation as measured by percent of cost of electricity. This is achieved through improved understanding of a class of non-volatile solvents which are potentially applicable to CO2 separation and identifying specific substances within that class which show promise in this application. By meeting the annual target for advanced capture and sequestration from power plants and other energy plants, the pre-combustion capture activities are developing economical ways to validate technology improvements of an advanced power plant with carbon capture technology. Achievement of the target will also help to support FE goals by reducing the cost of CCS for existing and future fossil fuel power generating facilities and provide protocols for pre-combustion CO2 capture technologies.
2009	Met	Annual Accomplishment: Systems engineering studies coordinated by NETL have shown that when incorporating

		advanced technology improvements of an advanced power plant with carbon capture, the resulting increase in busbar cost of electricity for 90% CO_2 capture is no more than 17% relative to 2003 technology baseline.
2008	Met	As indicated in the 2007 PART goal justification for the Sequestration Program, an advanced Integrated Gasification Combined Cycle plant with carbon capture and sequestration technologies under development at NETL, projects to have an increase in cost of electricity of 19%. This work has been done in laboratory scale experiments which are typically equivalent to kilowatt (kW) scale experimentation. Commercial based systems will require development to 100s of megawatts (MW) in size. Research in 2008 focused on the development of these types of technologies toward commercialization. Specifically, research was conducted to further develop polybenzimidazole (PBI) membranes for pre-combustion capture by SRI International and Los Alamos National Laboratory. This work involves the development of ASPEN-based engineering process models along with the production and evaluation of hollow-fiber based PBI membranes. Due to the need for additional technologies capable of approaching the 2012 program goals, a funding opportunity announcement for pre-combustion CO_2 capture technologies was also released in 2008. Project selections and awards from this effort are expected in 2009. Research was also performed by the sequestration program on post-combustion CO_2 capture during a transition of the research to another program at NETL.
2007	Met	--
Documentation: The subject analysis is documented in an attachment to the 2011 Coal Program GPRA Annual Report and is titled "Appendix B: IGCC/CS System Analysis: IGCC Plant that Incorporates Advanced Technologies to Capture and Sequester CO_2". The report is available from NETL.		

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Carbon Sequestration - Phase III*
Inject 1.5 million metric tons of CO_2 cumulatively at large-volume field test sites since 2009 to demonstrate the formation's capacity to sequester carbon by developing technologies that can safely and economically store carbon dioxide from coal-based energy systems

Results:

FY	Target	Commentary
2011	Met	An Early Test initially injected 627,744 metric tons of CO2 into the lower Tuscaloosa Formation from July 2008 until April 2009 as a Phase II project. Phase III started in April 2009 and continues to inject CO2 today. Some of the CO2 is produced and recycled back into the Tuscaloosa Formation as part of an enhanced oil recovery project, as CO2 is a potent hydrocarbon solvent. The combination of what is injected, produced, and recycled back into the earth is part of an accounting system that determines what is actually stored in the Tuscaloosa Formation. As of August 5, 2011, an additional 3,090,955 metric tons has been stored in Phase III from 2009 until the present. The Southeast Regional Carbon Sequestration Partnership (SECARB) is conducting two large scale injection projects in the lower Tuscaloosa Formation and Paluxy Formations, a key component of a larger, regional group of similar formations, called the Gulf Coast Wedge. The first injection project or ""Early Test"" has initiated injection of CO2 into the lower Tuscaloosa Formation. The technical knowledge developed by these large-scale injection projects will result in best practices that can be used by all projects as they perform additional large-volume field tests. These field tests will demonstrate the capacity of the formations to sequester carbon by developing technologies that can safely and economically store CO2 from coal-based energy systems. Preparing CCS for broad scale deployment requires significant technical and non-technical work to be completed in injection tests and these types of tests lay the path for integrated demonstrations of CCS.
2010	Met	The Southeast Regional Carbon Sequestration Partnership (SECARB) is conducting a two-step, large-volume injection test in the lower Tuscaloosa Formation and Paluxy Formation. During the FY 2010 months from October 1, 2009 thru July 31, 2010, SECARB injected 1,368,098 metric tons (1,504,908 tons) of CO2. This amount of CO_2 injected exceeds the Annual Target amount by 368,098 metric tons (504,908 tons). The DOE-sponsored Weyburn-Midale Monitoring and Storage Project is the second large-volume carbon storage project to inject more than 1 million metric tons of CO_2. The current injection rate of over 2 million metric tons of CO_2 per year is being accomplished at the Weyburn Oil Field in Saskatchewan, Canada. These field tests will demonstrate the capacity of the formations to sequester carbon by developing technologies and best practices that can safely and economically store CO_2 from coal-based energy systems. During the fiscal year 2010 months from October 1, 2009, thru July 31, 2010, SECARB has injected 1,368,098 metric tons (1,504,908 tons) of CO2. This amount of CO2 injected exceeds the Annual Target amount by 368,098 metric tons (504,908 tons). Injection amounts for the months of August and September have not been reported yet, but once received will further validate that the milestone has been met without dispute. The DOE-sponsored Weyburn-Midale Monitoring and Storage Project is the second large-volume carbon storage project to inject more than 1 million metric tons of CO_2. The current injection rate of over 2 million metric tons of CO_2 per year is being accomplished at the Weyburn Oil Field in Saskatchewan, Canada. The CO_2 injection is part of an ongoing enhanced oil recovery effort that is highly instrumented for tracking and accounting for the CO_2 injected and stored in the field. Both Weyburn and the adjacent Midale oil field are highly suitable for CO_2 storage as part of the CO_2-EOR process and it is expected that more than 40 million tons of CO_2 can eventually be stored in these carbonate reservoirs over the

		coming decades. The technical knowledge developed by these large-scale injection projects will result in best practices that can be used by all projects as they perform additional large-volume field tests. These field tests will demonstrate the capacity of the formations to sequester carbon by developing technologies that can safely and economically store CO2 from coal-based energy systems. Preparing CCS for broad scale deployment requires significant technical and non-technical work to be completed in injection tests and these types of tests lay the path for integrated demonstrations of CCS.
2009	Met	Annual Accomplishment: The Southeast Regional Carbon Sequestration Partnership (SECARB), managed and administered under DOE Cooperative Agreement Number DE-FC26-05NT42590 by the Southern States Energy Board, initiated carbon dioxide (CO2) injection for their large-volume field test in 2009 in the saline waters beneath the oil bearing formation at the Cranfield site, near Natchez, Mississippi. Members of SECARB, The Bureau of Economic Geology (BEG) at the University of Texas at Austin and Denbury Resources, Incorporated, began this injection in three downdip wells. By June 30, 2009, scientific instrumentation installed nearly two miles beneath the surface was successfully tracking the movement of 890,014 metric tons of injected CO2.
2008	Met	Six Regional Carbon Sequestration Partnerships Phase III projects were awarded. Since award, these projects have begun their initial activities which include the site selection and documentation necessary for the National Environmental Policy Act requirements. The following projects have completed NEPA activities: Environmental Assessments for MGSC and SECARB, CXs for PCOR Fort Nelson Project and first Budget Period of SWP, MRCSP, and WESTCARB Partnerships. These tests will inject up to 1 million tons of Carbon Dioxide (CO2) per project with some at this rate per year into regionally significant geologic storage sites. These large scale injection tests are the key to establishing the best practices and developing the required regional infrastructure for CO_2 sequestration in geologic formations.
Documentation: Additional supporting information/documentation for the SECARB project is provided on a regular basis to the NETL project manager/partnership lead. Additionally, representatives from the SECARB will be in attendance at the Carbon Storage Program Infrastructure Annual Review Meeting, sponsored by NETL, to discuss progress made on the large-scale project. The Carbon Storage Program Infrastructure Annual Review Meeting is being held on November 15-17, 2011 in Pittsburgh, Pennsylvania.		

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Clean Coal Power Initiative (CCPI) Technology Demonstrations - Round 3*
Complete all CCPI Round 1 projects. Complete Front End Engineering and Design (FEED) of at least one CCPI-3 project

Results:

FY	Target	Commentary
2011	Met	Final Reports for all three CCPI-1 projects that completed their demo phases have been received and published. Post Project Assessments for all three CCPI-1 projects that completed their demo phases have been published. Thus, all activities under CCPI-1 have been completed, which in turn signifies completion of the first part of the Annual Target. Also, four Front End Engineering and Design (FEED) contracts were awarded as part of four CCPI-3 projects. Progress under these four projects has led to successful completion of the FEED Study for the AEP Mountaineer Project, which resulted in achievement of the Annual Target. Awarding four FEED contracts and completing one FEED study support FE goals though implementation of advanced technology demonstrations using public private partnerships.
2010	Met	NETL approved initiation of construction of the cooperative agreement with Southern Company, Demonstration Of A Coal-Based Transport Gasifier DE-FC26-06NT42391. The NEPA process was completed by issuing a Record of Decision, and the cooperative agreement was modified to approve construction. Construction has been initiated for the Southern Company project, site work, including grubbing and clearing is underway. In addition, awards were made for project selected under CCPI-3. The Project Definition Phases were initiated for four projects selected under the CCPI-3: American Electric Power Service Corporation, NRG Energy, Summit Texas Clean Energy LLC, and Hydrogen Energy California LLC. Initiating construction and awarding demonstration projects support FE goals though implementation of advanced technology demonstrations using public-private partnerships.
2009	Met	Annual Accomplishment Met: The Clean Coal Power Initiative Round 3 (CCPI-3) Funding Opportunity Announcement DE-PS26-08NT43181 was issued on August 11, 2008, and applications were received on January 20, 2009. In accordance with the Evaluation and Selection Plan, the qualifying proposals were reviewed by a Merit Review Board. Applications were subject to technical, financial, budget, and environmental evaluations. The results of these evaluations were presented to the Selection Official, and two project selections were announced on July 1, 2009. The projects selected under CCPI-3 in FY2009 will demonstrate the technical feasibility of capturing carbon dioxide emissions from coal-fueled power systems, and test the feasibility of large scale storage of CO2 in geologic formations.
2008	Met	The annual target is not met. The 4Q milestone will not be met before the end of the year. The issue with this milestone will impact schedule but not cost to achieve. The milestone will be met on January 15, 2009, which is the due date for submission of applications to the CCPI-3 Funding Opportunity Announcement. This amounts to a 3½ month schedule slip for this milestone. The annual target will be met by July 2009, when announcement of selections is scheduled for CCPI-3. There is no additional cost in meeting this annual target of completing the CCPI-3 solicitation. Activities are merely delayed, there are no additional activities required to meet this milestone or annual target. The overall impact of this delay is that there will be delays in initiating and completing projects under Objective 7, Clean Coal Power Initiative (CCPI) Technology Demonstrations. Future solicitations will not be delayed because schedules for these future solicitations depend on future year appropriations, which are not affected by the delay in meeting this milestone.

Documentation: Supporting documentation consists of the Final Reports, Post Project Assessments and the AEP Draft Final Report identified in the individual quarters below, which all support completion of the quarterly milestones.

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Fuels*
The Fuels activity helps reduce technological market barriers for the reliable, efficient, and environmentally friendly conversion of coal to hydrogen with a goal of $8.20/MMBTU (2002$). Initiate 12 lb H2/day test for hydrogen membrane separations

Results:

FY	Target	Commentary
2011	Met	In FY11, membrane testing and demonstration moved from laboratory scale pure gas tests to realistic test conditions using mixed gases, simulated contaminated syngas and actual coal-derived feeds. The WPI and UTRC membranes functioned for long-term durations at gasifier test facilities, operating at >2 lbs/day hydrogen production, verifying the commercial potential of the advanced membranes. A large Eltron membrane system was designed, engineered, fabricated and installed on an operating gasifier, with the capability to achieve hydrogen production levels of 12 lbs/day. In addition, preliminary systems engineering studies have shown that, when incorporated into a coal to hydrogen plant, technology advancements in the Fuels and Gasification Programs result in a cost of hydrogen production that meets or exceeds the annual target of $8.20/million Btu (costing methodology, including year dollars, adjusted to be consistent with the target basis). The objective of the work is to produce hydrogen, as an alternative fuel, from domestic coal resources in an efficient and environmentally friendly manner.
2010	Met	Research was conducted to develop several technologies to reduce the cost of hydrogen production from advanced gasifier syngas streams. An evaluation of a series of Water Gas Shift and Fischer-Tropsch catalysts, using mixed gas feeds (hydrogen, carbon monoxide, carbon dioxide, water), that have the potential to increase the efficiency of the membrane separators was completed. A comprehensive engineering design of advanced H_2-CO_2 Pd-based composite membrane separators within a process intensification framework that reduces the number of unit operations was produced. An alternate pathway to conduct comprehensive membrane tests and evaluations to prove the feasibility of using inexpensive, non-precious metal based membranes for economical hydrogen production was researched.
2009	Met	Annual Accomplishment Met: : During FY 2009, successful hydrogen separation membrane testing was conducted by Eltron Research, United Technologies and Worcester Polytechnic Institute. Testing has been conducted in the presence of sulfur impurities, using mixed gas feeds (H_2, CO, CO_2, H_2O) and at engineering prototype scale. Experiments utilizing mixed gas feeds have demonstrated the ability of these reactors to simultaneously promote the Water Gas Shift Reaction and achieve hydrogen separation. Under mixed gas conditions, a hydrogen flux of at least 340 standard cubic feet per hour per square foot (scfh/ft2) was observed with hydrogen purity of 99.99%, which both exceeds DOE's 2010 and 2015 H_2 flux and purity targets. The objective of the work conducted under the Hydrogen from Coal Program is to produce hydrogen, as an alternative fuel, from domestic coal resources in an efficient and environmentally friendly manner.
2008	Met	During FY 2008, successful membrane tests were conducted by Eltron Research, Southwest Research Institute and Argonne National Laboratory. The tests demonstrated that hydrogen can be effectively separated from syngas with purity of greater than 95%. In addition, the tests demonstrated that high hydrogen flux rates can be achieved, which meet or exceed the 2010 target flux rates (although in absence of sulfur contaminants). Meeting the Annual Target supports the FE goals in that: The objective of the work conducted under the Hydrogen from Coal Program is to produce hydrogen, as an alternative fuel, from domestic coal resources in an efficient and environmentally friendly manner.

2007	Met	Annual Accomplishment Met: Laboratory scale testing of three different membrane materials was successfully conducted during FY 2007. The tests were conducted by Media and Process Technology, Inc., Eltron Research and Development, Inc. and Argonne National Laboratory. The tests demonstrated that the membrane materials being developed under the Hydrogen from Coal Program can successfully separate hydrogen from coal derived syngas.
Documentation: Quarterly reports from seven project participants in M1 and three reports in preparation to be issued after FY2011.		

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Gasification - Cost*
Support the development and deployment of advanced low cost, low carbon, energy efficient electrical generation technologies. Targeting a <12% increase in Cost of Electricity (COE) compared to a 2003 baseline for a near zero emissions IGCC with CCS system

Results:

FY	Target	Commentary
2011	Met	The Annual Target was met by completing work on key sub systems within an IGCC-CCS system that contribute to lower parasitic power, efficient gas separation, low cost air separation, and more efficient fuel handling and feed systems. This work includes physical demonstration of the technologies along with system analysis to relate the work accomplished to COE impacts. Systems analysis studies, coordinated by NETL, reflected a 16% overall capital cost reduction, 2.9% increase in efficiency, and 12% decrease of COE when Warm Gas Cleanup (WGC) with Hydrogen Transport Membrane (HTM) technology were integrated together. This analysis is based on a comparison between this advanced system and a WGC with conventional Selexol. By integrating the dry solids pump technology into an IGCC flow sheet, a 2% efficiency increase can be realized when compared to gasifiers feeding a coal-water-slurry with traditional pump technology. Other studies conducted outside of NETL showed that an Ion Transport Membrane (ITM) sub system can be integrated into variety CCS systems with no major increase in COE. The accomplishments mentioned above directly align with the FE strategic goals. Also, the technologies have made significant progress with regards to their designs and development leading to pilot-scale testing.
2010	Met	Preliminary systems engineering studies coordinated by NETL have shown that when incorporated into the IGCC process flow sheet, technology advancements in the Advanced Power System Program result in 45% thermal efficiency at a capital cost of $1,600/kWe.
2009	Met	Systems engineering studies coordinated by NETL have shown that when incorporated into the IGCC process flow sheet, technology advancements in the Advanced Power System Program result in 44% thermal efficiency at a capital cost of $1,629/kW (in 2007 dollars)
2008	Met	Systems analysis coordinated by NETL have shown that when incorporated into the IGCC process flow sheet, technology advancements in the Advanced Power Systems Program result in a 43% thermal efficiency at a capital cost of $1,140/kWe (2003 baseline of $1300/KW).
2007	Met	Technology improvements in advanced power sytems show that the advanced power systems program achieved 42% thermal efficiency at a capital cost of $1,140/kWe, without incorporation of advancements in gas turbine technology. The gas turbine developments will further reduce capital cost and improve thermal efficiency, ultimately leading to the achievement of the 2010 performance goal of advanced coal-based power system capable of achieving 45-50% efficiency at a capital cost of $1000/KW (2002 Dollars) or less.

Documentation: Industry team partners have submitted detailed letters of their quarterly milestone accomplishments. Details are included in the quarterly technical progress and topical reports. See individual quarters below for details.

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *Innovations for Existing Plants*
Conduct laboratory tests through pilot-scale tests of advanced post and oxy-combustion capture technologies that show, through engineering and systems analyses studies, continued achievement toward the goal of 90% CO_2 capture and no more than a 55% increase in cost of electricity

Results:

FY	Target	Commentary
2011	Met	During the past year, significant testing was accomplished on post-combustion and oxy-combustion CO_2 capture systems. These tests included over 100 hours of 15MWth oxy-combustion testing conducted by Alstom, over 50 hours of parametric post-combustion sorbent-based CO_2 capture testing by SRI International and Aspen Aerogels, and pilot scale validation of 90% capture capability at the 1 kW scale by ADA and at 0.5 MW scale by Southern Company at the National Carbon Capture Center. These tests combined with the engineering, systems and cost analyses completed by MTR and ADA indicate that the Existing Plants Program has CO_2 capture technologies at various stages of development that are on a pathway to achieve at least 90% CO_2 capture at an increase in the cost of electricity of less than 55%. Meeting the annual target provides progress towards the achievement of the FE goal of 90% CO_2 capture with less than a 35% increase in the cost of electricity.
2010	Met	Oxy-combustion CO_2 capture testing was performed at pilot scales by Alstom and Reaction Engineering International (REI) for several coal types during 2010. During a couple of the Alstom test runs, Air Products evaluated the performance of their oxy-combustion CO_2 purification and compression system, which is vital to the eventual commercialization of the technology. A systems analysis developed by NETL OSAP indicates a pathway for the oxy-combustion technologies tested in these experiments along with other advances to surpass the 55% increase in cost of electricity. Additionally, GE Global Research conducted testing and a systems analysis on their advanced post-combustion solvent system that indicates the ability of the solvent system to achieve 90% CO_2 capture at approx a 55% increase in the cost of electricity. Meeting the annual target provides progress towards the achievement of the FE goal of 90% CO_2 capture with less than a 30% increase in the cost of electricity.
2009	Met	In 2009, research and development of CO_2 capture technologies continued the progress toward meeting the Department of Energy's goals. Several laboratory and pilot-scale experiments were initiated in order to evaluate and confirm the performance of these technologies. Nearly 500 tons of sub-bituminous coal was utilized in a successful oxycombustion pilot test campaign conducted by Alstom in their retrofit 15 megawatt thermal tangentially fired boiler simulation facility. This test furthers the development of a technology that produces high CO_2 concentrations in power plant flue gas and therefore minimizes CO_2 purification prior to storage.
2008	Met	Over the past two decades, the DOE Innovations for Existing Plants (IEP) Program has played a crucial role in moving advanced emission control technologies from concept to commercial reality. The successes from the program have been many. The IEP program has now taken on the critical challenge of climate change. In response to Congressional language in the Fiscal Year 2008 budget, the IEP program has shifted focus to R&D on carbon dioxide (CO_2) capture technologies that can be retrofitted to existing pulverized coal-fired power plants. The program will also continue to address the important link between power plants and water use through its water management research. The IEP CO_2 capture performance (90% CO_2 capture) and cost target (no more than a 35% increase in COE) for new and existing pulverized coal power plants was established in 2008 through detailed engineering analyses studies

		specific to new and existing pulverized coal power plants. The program has established step wise targets for laboratory-scale development of post- and oxy-combustion CO_2 capture technologies that will show, through engineering and economic analyses, yearly progress towards meeting the performance and cost goals. In 2008, The key activity undertaken by the IEP program was the issuance of a funding opportunity announcement (FOA) specifically focused on post-combustion and oxy-combustion CO_2 capture technologies for existing coal-fired power plants. Projects selected from this FOA were selected based upon the ability of the technology to meet the IEP program goals. The IEP Program tentative goals are to develop technologies capable of achieving less than a 35% increase in the cost of electricity while capturing 90% of the CO_2 processed by the capture system. This is a necessary adjustment from the goal schedule in this target.
Documentation: A letter of justification signed by Principal Investigator of Alstrom dated November 22, 2010, is filed on the K drive.		

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Clean Coal
Website: http://www.fossil.energy.gov/

Performance Goal: *SECA Fuel Cells - Capitol Costs*
Complete Design for Module Proof-of-Concept maintaining economic power block: Stack: $175/kW Power Block: $700/kW (Ref: 2007)

Results:

FY	Target	Commentary
2011	Met	FuelCell Energy (NT41837) completed the design of a 250kW proof-of-concept fuel cell module system. The design includes two identical Quads, each comprised of four stack towers. The design includes process piping, instrumentation and control routing, and electrical takeoffs and power system routing. FCE and its technology subcontractor, updated the stack and power block costs to the year 2007 dollar baseline. The estimated fuel cell system (power block) cost is $635/kW, and the stack cost is $147/kW. These estimates are below the $700/kW and $175/kW targets, indicating a positive achievement. This work, validated through stack testing, will reduce the cost and environmental impact of new clean coal fired plants (Integrated Gasification Combined Cycle plants), enable 99% carbon dioxide (CO2) capture, reduce water requirements substantially and increase energy security through increased use of domestic energy resources.
2010	Met	FuelCell Energy (FCE) tested a 16-cell stack at the Versa Power Systems (VPS) facilities in Calgary, Alberta, Canada. The stack achieved 467mW/cm2 on July 17, 2010. The test results, in conjunction with FCEs IGFC system and cost models, were used to establish the fuel cell power block system cost. The estimated fuel cell system (power block) cost is $371/kW in year 2000 dollars. This work, validated through stack testing, will reduce the cost and environmental impact of new clean coal fired plants (IGCC plants), enable 99% carbon dioxide (CO_2) capture, reduce water requirements substantially and increase energy security through increased use of domestic energy resources.
2009	Met	Delphi, as a solid oxide fuel cell (SOFC) technology development subcontractor for the Solid State Energy Conversion Alliance (SECA) Industry Team led by UTC, designed, fabricated and tested a 5-cell short stack based upon the latest Gen 4 sealed cells. The tests demonstrated a power density of 496mW/cm2. Based upon this performance, system and cost analysis predicts a high-volume manufacturing cost of $163.22/kW. Furthermore, Versa Power Systems, as a SOFC technology development subcontractor for the SECA Industry Team led by FuelCell Energy, designed, fabricated and tested a 92-cell stack based upon the latest TSCII sealed cells. The tests demonstrated a power density of 393 mW/cm2.
2008	Met	FuelCell Energy, Inc. (FCE) is representative of the progress in solid oxide fuel cell (SOFC) system cost reduction within the Solid State Energy Conversion Alliance (SECA), having achieved a system cost of $560/kW, surpassing the FY08 target of $600/kW. This cost is based upon stack tests initiated by FCE in July, 2008 and systems modeling and analysis. The Solid State Energy Conversion Alliance (SECA) program supports the development of advanced fuel cell systems through fuel cell power block research, development, design and manufacturing. This work, validated through stack testing, will reduce the cost and environmental impact of new clean coal fired plants (Integrated Gasification Combined Cycle plants), enable 99% carbon dioxide (CO_2) Capture, reduce freshwater requirements substantially and increase energy security through increased use of domestic energy resources. Achievement of this annual target system costs of $600/kW or less - reflects significant progress towards the SECA goal of low-cost, high-efficiency modular solid oxide fuel cell (SOFC) systems.

Documentation: FuelCell Energy (Dr. Hossein Ghezel-Ayagh, PI for NT41837) letter dated June 27, 2011. Filed on K: Drive and on M1. Results will be further documented in the Q3FY11 Progress Report. See hyperlink in Q4. Results will be further documented in the Q4FY11 Progress Report, Factory Cost Estimate Topical Report and the Annual Technical Topical Report.

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Petroleum Reserves
Website: http://www.fossil.energy.gov/programs/reserves/index.html

Performance Goal: *Drawdown Readiness*
Ensure Strategic Petroleum Reserve drawdown readiness by achieving > 95% of monthly maintenance and accessibilty goals

Results:

FY	Target	Commentary
2011	Met	Annual Accomplishment Met: Ensure drawdown readiness by achieving 98% of monthly maintenance and accessibility goals.
2010	Met	This is a weighted average of several maintenance performance elements calculated on a monthly basis. Achieved a 98.4% for FY 2009.
2009	Met	This is a weighted average of several maintenance performance elements calculated on a monthly basis. Achieved a 98.4% for FY 2009.
2008	Met	This final rating of 98% represents the weighted average of several maintenance performance elements calculated on a monthly basis. Results for the fiscal year are based upon the average scores for all 12 months and exceeds the target of 95%.

Documentation: This rating is the weighted average of several maintenance performance elements calculated on a monthly basis. Quarterly rating is an average of the quarter's monthly scores. Annual results are based upon the average scores for all 12 months.

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Petroleum Reserves
Website: http://www.fossil.energy.gov/programs/reserves/index.html

Performance Goal: *Strategic Petroleum Reserve (SPR) Operating Cost*
Ensure cost efficiency of SPR operations by achieving operating cost per barrel of capacity of $0.229

Results:

FY	Target	Commentary
2011	Met	Annual Accomplishment Met: Ensure cost efficiency of SPR operations by achieving operating cost per barrel of capacity of $0.229
2010	Met	This measure is a calculation of annual program costs divided by the total storage capacity in barrels (727 million barrels). Year-end annual costs equate to an operating cost per barrel of $0.213. Cost efficiencies were achieved by favorable negotiation of the Seaway terminalling contract which resulted in elimination of standby charges. Additionally, accelerating the schedule for relocation of the vapor pressure plant from the Big Hill to the Bryan Mound site resulted in Power and Operations cost savings. Achieved an operating cost of $0.207 per barrel of capacity in FY 2009.
2009	Met	This measure is a calculation of annual program costs divided by the total storage capacity in barrels (727 million barrels). Year-end annual costs equate to an operating cost per barrel of $0.213. Cost efficiencies were achieved by favorable negotiation of the Seaway terminalling contract which resulted in elimination of standby charges. Additionally, accelerating the schedule for relocation of the vapor pressure plant from the Big Hill to the Bryan Mound site resulted in Power and Operations cost savings. Achieved an operating cost of $0.207 per barrel of capacity in FY 2009.
2008	Met	This measure is a calculation of annual program costs divided by the total storage capacity in barrels (727 million barrels). Year-end annual costs equate to an operating cost per barrel of $0.187. Cumulative costs were below the target due to cost efficiencies achieved.
2007	Met	This measure is a calculation of annual program costs divided by the total storage capacity in barrels (727 million barrels). Year-end annual costs equate to an operating cost per barrel of $0.188. Cost efficiencies were achieved by favorable negotiation of the Seaway terminalling contract which resulted in elimination of standby charges. Additionally, accelerating the schedule for relocation of the vapor pressure plant from the Big Hill to the Bryan Mound site resulted in Power and Operations cost savings.

Documentation: This measure is a calculation of annual program costs divided by the total storage capacity in barrels (727 million barrels). Quarterly performance targets for operating costs are set toward accomplishing an annualized estimate of the operating cost per barrel of storage capacity.

Strategic Goal: 1: Transforming our Energy Systems
Office: Fossil Energy
Program: Petroleum Reserves
Website: http://www.fossil.energy.gov/programs/reserves/index.html

Performance Goal: *Sustained (90 day) Drawdown Rate*
Enable ready distribution of Strategic Petroleum Reserve (SPR) oil by achieving maximum sustained (90 day) drawdown rate of 4.4 million barrels per day

Results:

FY	Target	Commentary
2011	Met	Annual Accomplishment Met: Enable ready distribution of SPR oil by achieving maximum sustained (90 day) drawdown rate of 4.4 million barrels per day.
2010	Met	At year-end, the SPR's drawdown rate was 4.4 million barrels per day as evidenced in the SPR Drawdown Readiness and Capability (RECAP) Report and the Online Readiness Computerized Assessment (ORCA) System. This metric reflects the drawdown rate (in barrels per day) that the SPR can sustain for an initial 90 days in order to distribute crude oil from underground storage sites to distribution points.
2009	Met	At year-end, the SPR's drawdown rate was 4.4 million barrels per day as evidenced in the SPR Drawdown Readiness and Capability (RECAP) Report and the Online Readiness Computerized Assessment (ORCA) System. This metric reflects the drawdown rate (in barrels per day) that the SPR can sustain for an initial 90 days in order to distribute crude oil from underground storage sites to distribution points.
2008	Met	The SPR maintained its drawdown rate of 4.4 million barrels per day . This metric reflects the drawdown rate (in barrels per day) that the SPR can sustain for an initial 90 days in order to distribute crude oil from underground storage sites to distribution points.
2007	Met	At year-end, the SPR's drawdown rate was 4.4 million barrels per day as evidenced in the SPR Drawdown Readiness and Capability (RECAP) Report and the Online Readiness Computerized Assessment (ORCA) System. This metric reflects the drawdown rate (in barrels per day) that the SPR can sustain for an initial 90 days in order to distribute crude oil from underground storage sites to distribution points.

Documentation: This metric reflects the drawdown rate (in barrels per day) that the SPR can sustain for an initial 90 days in order to distribute crude oil from underground storage sites to distribution points. SPR's actual drawdown rate per quarter is evidenced in the SPR Drawdown Readiness and Capability (RECAP) Report and the Online Readiness Computerized Assessment (ORCA) System.

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Bonneville Power Administration
Website: www.bpa.gov

Performance Goal: *Hydropower Generation Efficiency Performance*
Hydropower Generation Efficiency Performance: Achieve 97.5% Heavy-Load-Hour Availability (HLHA) through efficient performance of federal hydro-system processes and assets, including joint efforts of BPA, Army Corps of Engineers, and Bureau of Reclamation

Results:

FY	Target	Commentary
2011	Met	BPA and its FCRPS partners met this operational goal for the hydropower system with a result of 100.6% (official) for the year. Meeting this target demonstrates BPA's commitment and ability to provide reliable power to the region. By optimizing planned maintenance and taking into consideration expected forced outages, BPA's heavy load hour performance ensured that BPA had the system capacity to serve its system load.
2010	Met	BPA and its FCRPS partners met this operational goal for the hydropower system with a result of 99.6%. Meeting this target demonstrates Bonneville's commitment and ability to provide reliable power to the region. By optimizing planned maintenance and taking into consideration expected forced outages, BPA's heavy load hour performance ensured that BPA had the system capacity to serve its system load.
2009	Met	BPA achieved this target with 100.2% Heavy-Load-Hour Availability for FY 2009, demonstrating BPA's commitment and ability to provide reliable power to the region. By optimizing planned maintenance and taking into consideration expected forced outages, BPA's heavy load hour performance ensured that BPA had the system capacity to serve its system load.
2008	Met	BPA achieved this target with 99.6% Heavy-Load-Hour Availability for FY 2008, demonstrating BPA's commitment and ability to provide reliable power to the region. By optimizing planned maintenance and taking into consideration expected forced outages, BPA's heavy load hour performance ensured that BPA had the system capacity to serve its system load.
2007	Met	BPA and its FCRPS partners met this operational goal for the hydropower system with a result of 99.6% (official) for the cumulative four quarters of FY 2007. Achieving this target for FY 2007 demonstrates BPA's commitment and ability to provide reliable power to the region. By optimizing planned maintenance and taking into consideration expected forced outages, BPA's heavy load hour performance ensured that BPA had the system capacity to serve its system load.

Documentation: Quarterly FY 2011 Findings Memo (from BPA Chief Operating Officer to BPA Administrator)

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Bonneville Power Administration
Website: www.bpa.gov

Performance Goal: *Repayment of Federal Power Investment Performance*
Meet planned annual repayment of principal on federal power investments

Results:

FY	Target	Commentary
2011	Met	BPA made its annual Treasury payment in full with an FY 2011 Treasury principal amortization payment of $409.5 million which included $337.5 million of planned principal amortization and $72.0 million of advanced principal amortization. BPA met this performance target for the 28th straight year, demonstrating BPA's ongoing commitment to meeting its obligations to U.S. taxpayers. BPA made a total annual payment of $829.8 million of which $409.5 million was principal amortization.
2010	Met	BPA met this performance target for the 27th straight year, demonstrating ongoing commitment to meeting its obligations to U.S. taxpayers. BPA made a total annual payment of $864.1 million of which $459.8 million was principal amortization.
2009	Met	BPA met this performance target for the 26th straight year, demonstrating BPA's ongoing commitment to meeting its obligations to U.S. taxpayers. BPA made a total annual payment of $845.1 million of which $432 million was principal amortization.
2008	Met	BPA met this performance target for the 25th straight year, demonstrating BPA's ongoing commitment to meeting its obligations to U.S. taxpayers. BPA made a total $963 million payment, $211 million of which was additional amortization due to debt optimization (credits of $223 million resulted in a net cash payment of $740 million). Of this total, BPA's FY 2008 repayment of principal amount was $555 million.
2007	Met	BPA made its annual Treasury payment in full and on time, with a FY 2007 Treasury principal amortization payment of $618.4 million which included $329.5 million of planned principal amortization and $289.9 million of advanced principal amortization. Cumulative advanced amortization (principal repaid earlier than planned) at the end of FY 2007 totaled $2.091 billion. For the 24th straight year BPA has made its annual Treasury payment in full and on time -- meeting this performance target demonstrates BPA's ongoing commitment to meeting its obligations to U.S. taxpayers.

Documentation: Quarterly FY 2011 Findings Memo (from BPA Chief Operating Officer to BPA Administrator)

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Bonneville Power Administration
Website: http://opi/reports/cps

Performance Goal: *System Reliability Performance - NERC Rating*
Attain average North American Reliability Council (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) which measures generation/load balance on one-minute intervals (rating > or = 100)

Results:

FY	Target	Commentary
2011	Met	BPA achieved performance on CPS-1 of 137.93% against a target of no less than 100% (reported as a 12-month rolling average at the end of each quarter). Meeting this target demonstrates BPA's ongoing commitment and ability to provide reliable transmission for the region.
2010	Met	BPA achieved the CPS1 standard for 12 of 12 months. Meeting this target demonstrates BPA's ongoing commitment and ability to provide reliable transmission for the region.
2009	Met	BPA achieved 6 of 6 possible CPS pass ratings in each of the four quarters for FY 2009 for a total of 24 out of 24 possible pass ratings, demonstrating Bonneville's ongoing commitment and ability to provide reliable transmission for the region. For July, August, and Sept. 2009 respectively, BPA achieved performance on CPS-1 of 196.0%, 191.2%, and 189.7%, against a target of no less than 100%; and on CPS-2 of 99.2%, 99.2%, and 98.4%, against a target of no less than 90%
2008	Met	BPA achieved 6 of 6 possible CPS pass ratings in all four quarters for FY 2008, demonstrating BPA's ongoing commitment and ability to provide reliable transmission for the region. For July, August and Sept. 2008 respectively, BPA achieved performance on CPS-1 of 197.0%, 187.6%, and 187.1%, against a target of no less than 100%; and on CPS-2 of 97.6%, 96.0%, and 96.8%, against a target of no less than 90%.
2007	Met	For July, Aug., and Sept. 2007, respectively, achieved performance on CPS-1 of 197.1%, 195.5%, and 192.3% against a target of no less than 100%; and on CPS-2 of 96.3%, 97.5%, and 97.1% against a target of no less than 90%. Achieving 6 of 6 possible CPS pass ratings in all four quarters for FY 2007 demonstrates BPA's ongoing commitment and ability to provide reliable transmission for the region.

Documentation: Quarterly FY 2011 Findings Memo (from BPA Chief Operating Officer to BPA Administrator)

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Southeastern Power Administration
Website: www.sepa.doe.gov

Performance Goal: *Repayment of Federal Power Investment Performance*
Repay the federal power investment within the required repayment period

Results:

FY	Target	Commentary
2011	Met	During FY 2011, Southeastern achieved 100% of required repayment of the federal investment. Accomplishing this goal reflects Southeastern's commitment to repay the federal investment and maintain financial integrity. Repaid $19.8 million.
2010	Met	During FY 2010, Southeastern achieved 100% of required repayment of the federal investment. Accomplishing this goal reflects Southeastern's commitment to repay the federal investment and maintain financial integrity. Repaid $29 million.
2009	Met	During FY 2009, Southeastern achieved 100% of required repayment of the federal investment. Accomplishing this goal reflects Southeastern's commitment to repay the federal investment and maintain financial integrity. Repaid $1.6 million.
2008	Met	During FY 2008, Southeastern achieved 100% of required repayment of the federal investment. Accomplishing this goal reflects Southeastern's commitment to repay the federal investment and maintain financial integrity.
2007	Met	Southeastern exceeded its required repayment. Despite record drought conditions Southeastern repaid $2.1 million which was greater than the target amount.

Documentation: Third-party verification of supporting the financial audit data for tracking the repayment measures is prepared by an independent accounting firm (KPMG).

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Southeastern Power Administration
Website: www.sepa.doe.gov

Performance Goal: *System Reliability Performance - NERC*
Meet North American Electric Reliability Council (NERC) Control Performance Standards (CPS) of CPS1>100 and CPS2>90 and meet or exceed industry averages. CPS1 measures a generating system's performance at matching supply to changing demand requirements and supporting desired system frequency in one minute increments. CPS2 measures a generating system's performance at limiting the magnitude of generation and demand imbalances in ten minute increments

Results:

FY	Target	Commentary
2011	Met	During FY 2011, Southeastern's average annual results are 243.12 for CPS 1 & 99.89 for CPS 2. Accomplishing this goal reflects Southeastern's ability to maintain safe, efficient and effective power system operation for control area performance.
2010	Met	During FY 2010, Southeastern's average annual results are 234.10 for CPS 1 & 99.83 for CPS 2. Accomplishing this goal reflects Southeastern's ability to maintain safe, efficient and effective power system operation for control area performance.
2009	Met	During FY 2009, Southeastern's average annual results are 227.97 for CPS 1 & 99.85 for CPS 2. Accomplishing this goal reflects Southeastern's ability to maintain safe, efficient and effective power system operation for control area performance.
2008	Met	During FY 2008, Southeastern achieved 6 out of 6 control compliance ratings. Southeastern's average annual results are 207.19 for CPS 1 & 99.81 for CPS 2. Accomplishing this goal reflects Southeastern's ability to maintain safe, efficient and effective power system operation for control area performance.
2007	Met	Achieving this target provides grid operators assurance that the power comes on line when it is supposed to (CPS 1) and that the quality of the power meets prescribed standards (CPS 2) in order for it to be useful to the transmission grid. CPS 1: 186.34; CPS 2: 99.71

Documentation: Third-party verification of supporting CPS-1 & 2 documentation can be provided by the SERC Reliability Corporation. Unlike other regions SERC data is not included in the SERC section of the NERC website due to confidentiality issues.

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Southwestern Power Administration
Website: www.swpa.gov

Performance Goal: *Annual Operating Cost Performance*
Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated below the national median for public power

Results:

FY	Target	Commentary
2011	Met	During FY 2011, cost per kilowatt-hour statistics are as follows: Southwestern: $0.0163 National industry average: $0.062 Therefore, Southwestern is less than the national industry average.
2010	Met	During FY 2010, cost per kilowatt-hour statistics are as follows: Southwestern: $0.0143 National industry average: $0.062 Therefore, Southwestern is less than the national industry average.
2009	Met	During FY 2009, cost per kilowatt-hour statistics are as follows: Southwestern: $0.0126 National industry average: $0.062 Therefore, Southwestern is less than the national industry average.
2008	Met	During FY 2008, cost per kilowatt-hour statistics are as follows: Southwestern: $0.0130 National industry average: $0.0153 Therefore, Southwestern is less than the national industry average.
2007	Met	During FY 2007, cost per kilowatt-hour statistics are as follows: Southwestern: $0.0126 National industry average: $0.0137 Therefore, Southwestern is less than the national industry average.

Documentation: APPA Selected Financial and Operating Ratios of Public Power Systems, Annual Reports, Energy Information Administration Form 1 Reports, CBO Budget and Economic Outlook Forecast.

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Southwestern Power Administration
Website: www.swpa.gov

Performance Goal: *Repayment of the Federal Power Investment Performance*
Ensure timely repayment of federal investment in accordance with DOE Order RA 6120.2 by maintaining unpaid investment (UI) equal to or less than the allowable unpaid investment (AUI)

Results:

FY	Target	Commentary
2011	Met	During FY 2011, Southwestern achieved the timely repayment of the federal investment. Achieving this target reflects Southwestern's commitment to meet repayment of the federal investment, thereby achieving and maintaining financial integrity.
2010	Met	During FY 2010, Southwestern achieved the timely repayment of the federal investment. Achieving this target reflects Southwestern's commitment to meet repayment of the federal investment, thereby achieving and maintaining financial integrity.
2009	Met	During FY 2009, Southwestern achieved 100.0% of planned repayment of the federal investment. Achieving this target reflects Southwestern's commitment to meet repayment of the federal investment, thereby achieving and maintaining financial integrity
2008	Met	During FY 2008, Southwestern achieved 100.0% of planned repayment of the federal investment. Achieving this target reflects Southwestern's commitment to meet repayment of the federal investment, thereby achieving and maintaining financial integrity.
2007	Met	During FY 2007, Southwestern achieved 100.0% of planned repayment of the federal investment. Achieving this target reflects Southwestern's commitment to meet repayment of the federal investment, thereby achieving and maintaining financial integrity.

Documentation: FY2010 Power Repayment Studies.

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Southwestern Power Administration
Website: www.swpa.gov

Performance Goal: *System Reliability Performance - NERC Rating*
Meet NERC Control Performance Standards (CPS) of CPS1>100 and CPS2>90 and meet or exceed industry averages. CPS1 measures a generating system's performance at matching supply to changing demand requirements and supporting desired system frequency in one minute increments. CPS2 measures a generating system's performance at limiting the magnitude of generation and demand imbalances in ten minute increments.

Results:

FY	Target	Commentary
2011	Met	During FY 2011, Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 199.96 for CPS 1 & 99.82 for CPS 2. Achieving this target reflects Southwestern's ability to maintain acceptable power system operation for control area performance, thereby operating the power system efficiently and effectively.
2010	Met	During FY 2010, Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 199.99 for CPS 1 & 99.87 for CPS 2. Achieving this target reflects Southwestern's ability to maintain acceptable power system operation for control area performance, thereby operating the power system efficiently and effectively.
2009	Met	During FY 2009, Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 199.98 for CPS 1 & 99.83 for CPS 2. Achieving this target reflects Southwestern's ability to maintain acceptable power system operation for control area performance, thereby operating the power system efficiently and effectively.
2008	Met	During FY 2008, Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 199.49 for CPS 1 & 99.82 for CPS 2. Achieving this target reflects Southwestern's ability to maintain acceptable power system operation for control area performance, thereby operating the power system efficiently and effectively.
2007	Met	During FY 2007, Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 199.26 for CPS 1 & 99.61 for CPS 2. Achieving this target reflects Southwestern's ability to maintain acceptable power system operation for control area performance, thereby operating the power system efficiently and effectively.

Documentation: NERC Monthly Control compliance Rating Report for 2000 through 2010. Data can be found at: http://www.nerc.com/~filez/cps.html.

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Southwestern Power Administration
Website: www.swpa.gov

Performance Goal: *System Reliability Performance - Outages*
Effectively operate the transmission system to limit the number of accountable outages to no more than 3 annually

Results:

FY	Target	Commentary
2011	Met	During FY 2011, Southwestern had no preventable customer outages. Achieving this target reflects Southwestern's ability to provide reliable service to customers each year, thereby maintaining power system reliability.
2010	Met	During FY 2010, Southwestern had one preventable customer outage. Achieving this target reflects Southwestern's ability to provide reliable service to customers each year, thereby maintaining power system reliability.
2009	Met	During FY 2009, Southwestern had no preventable customer outages. Achieving this target reflects Southwestern's ability to provide reliable service to customers each year, thereby maintaining power system reliability.
2008	Met	During FY 2008, Southwestern had no preventable customer outages. Achieving this target reflects Southwestern's ability to provide reliable service to customers each year, thereby maintaining power system reliability.
2007	Met	During FY 2007, Southwestern had no preventable customer outages. Achieving this target reflects Southwestern's ability to provide reliable service to customers each year, thereby maintaining power system reliability.

Documentation: Southwestern's Point of Delivery Incidents Log

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Western Area Power Administration
Website: www.wapa.gov

Performance Goal: *Annual Operating Cost Performance*
Efficiency Performance: Provide power at the lowest possible cost by keeping total operation and maintenance expense per kilowatthour generated below the national median for public power ($0.060)

Results:

FY	Target	Commentary
2011	Met	As calculated using Western's most recent audited financial statements, Western's FY 2011 ratio of O&M costs per kWh generated ($0.019) is less the national median for public power ($0.060).
2010	Met	As calculated using Western's most recent audited financial statements, Western's FY 2010 ratio of O&M costs per kWh generated ($0.012) is less the national median for public power ($0.062).

Documentation: Current American Public Power Association Selected Financial and Operating Ratios of Public Power Systems as compared to applicable program costs reported in Western's annual audited financial statements.

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Western Area Power Administration
Website: www.wapa.gov

Performance Goal: *Repayment of Investment Performance*
Ensure unpaid investment (UI) is equal to or less than the allowable unpaid investment (AUI) in accordance with DOE Order RA 6120.2 and Reclamation Law

Results:

FY	Target	Commentary
2011	Met	Collective repayment data for Western projects for FY 2011 indicate that UI is equal to or less than AUI ($6.136 billion/$8.520 billion)
2010	Met	Collective repayment data for Western projects for FY 2010 indicate that UI is equal to or less than AUI ($6.216 billion/$8.930 billion).
2009	Met	Western's unpaid investment is equal to or less than the allowable unpaid investment (UI= $6,195/AUI=$8,868 (in $M)). Achieving this target reflects Western's commitment to repay federal investment within required repayment periods, meeting our obligation to the U.S. Treasury.
2008	Met	Western achieved its FY 2008 repayment ratio in that collective repayment data for the UI/AUI ratio was equal to or less than 1.00. This supports Western's commitment to repay federal investment within required repayment periods, meeting our obligations to the U.S. Treasury.
2007	Met	Collective repayment data for Western's projects through FY 2007 indicate that the ratio is on target to be equal to or less than 1.00.

Documentation: Final FY 2010 Power Repayment Studies

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Western Area Power Administration
Website: www.wapa.gov

Performance Goal: *System Reliability Performance - NERC Rating*
Meet North American Electric Reliability Corporation (NERC) Control Performance Standards (CPS) of CPS1>100 and CPS2>90 and meet or exceed industry averages. CPS1 measures a generating system's performance at matching supply to changing demand requirements and supporting desired system frequency in one minute increments. CPS2 measures a generating system's performance at limiting the magnitude of generation and demand imbalances in ten minute increments.

Results:

FY	Target	Commentary
2011	Met	Annual averages for CPS1 and CPS2 were 164.16 and 91.38, respectively. Achieving this target reflects Western's ability to operate the power system efficiently which contributes to the stability of the nation's integrated power grid.
2010	Met	Annual averages for CPS1 and CPS2 were 178.03 and 96.45, respectively.
2009	Met	All four Western control areas achieved a “pass” rating for both CPS1 and CPS2 for the year. Western’s FY 2009 averages: CPS1: 188.45 CPS2: 99.45 Achieving this target reflects Western’s ability to operate the power system efficiently which contributes to the stability of the nation’s integrated power grid.
2008	Met	Western's FY 2008 CPS1 and CPS2 averages are 184.42 and 98.92, respectively. Balanced supply and demand reflect efficient power operations which contribute to the stability of the nation's integrated electric grid.
2007	Met	Overall Western FY 2007 CPS1 and 2 averages are: CPS1 - 181.08; CPS2 - 98.64. Balanced supply and demand ensures sage and stable electric power grid operation.

Documentation: NERC Control Performance Report

Strategic Goal: 1: Transforming our Energy Systems
Office: Power Marketing Administration
Program: Western Area Power Administration
Website: www.wapa.gov

Performance Goal: *System Reliability Performance - Outages*
Accountable customer and/or transmission element outages will not exceed 26 for FY 2011

Results:

FY	Target	Commentary
2011	Not Met	For FY 2011, Western experienced 27 accountable outages against our target of 26 or less. Following formal incident investigation procedures, representatives from Operations, Maintenance and Safety reviewed each individual outage to determine the root cause, contributing factors, lessons learned, and to provide recommendations for improving processes or implementing procedures to prevent reoccurrence. A final report was prepared within 30 days for each incident.
2010	Met	For FY 2010, Western experienced 11 accountable outages against our target of 26 or less.
2009	Met	For FY2009, Western experienced 15 outages against our target of 26 or less. Achieving this target reflects Western?s ability to operate and maintain the power system effectively to ensure system reliability and dependable service to customers.
2008	Met	For FY 2008, Western reported 22 accountable outages against our target of 26 or less. Achieving this target reflects our ability to effectively operate and maintain the power system to ensure dependable service to customers.
2007	Met	October-2, November-1, December-3, January-0, February-1, March-0, April-2, May-1, June-1, July-2, August - 1, September - 3. The annual total accountable customer and/or transmission element outages for Western is 17 for FY 2007. Achieving this target reflects Western's ability to maintain power system reliability, thus providing dependable service to customers.

Documentation: FY 2011 Accountable Outages Report

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Information Administration
Program: Energy Information Administration
Website: www.eia.gov

Performance Goal: *Quality of EIA Information Products*
90% or more of customers are satisfied or very satisfied with the quality of EIA information

Results:

FY	Target	Commentary
2011	Met	EIA actively solicits external feedback to gain a better understanding of who uses the agency's information products, how they are used, and most importantly, whether they meet customers' diverse and evolving needs. This feedback spurs product innovation, which in turn supports the Department's goal of leading the national conversation on energy.
2010	Met	EIA believes that the ratings and comments from our customers provide us with important insights into how our information is used, who the customers are, what they are looking for, and areas for future improvements. This feedback helps EIA to continue to provide high-quality and relevant information.
2009	Met	EIA believes that the ratings and comments from our customers provide us with important insights into how our information is used, who the customers are, what they are looking for, and areas for future improvements. This feedback helps EIA to continue to provide high-quality and relevant information.
2008	Met	EIA believes that the ratings and comments from our customers provide us with important insights into how our information is used, who the customers are, what they are looking for, and areas for future improvements. This feedback helps EIA to continue to provide high-quality and relevant information.
2007	Met	EIA believes that the ratings and comments from our customers provide us with important insights into how our information is used, who the customers are, what they are looking for, and areas for future improvements. This feedback helps EIA to continue to provide high-quality and relevant information.

Documentation: EIA conducted the annual web customer survey with OMB approval and the results are proof that the survey was conducted. The results are stored in the files of the Office of Communications and Outreach in EIA.

Strategic Goal: 1: Transforming our Energy Systems
Office: Energy Information Administration
Program: Energy Information Administration
Website: www.eia.gov

Performance Goal: *Timeliness of EIA Information Products*
(95%)

Results:

FY	Target	Commentary
2011	Met	As the nation's premier source of energy information, customers rely on EIA for timely delivery of independent, impartial statistics and analyses. This reliability promotes efficient energy markets while also contributing to sound policymaking and public understanding of energy and its interaction with the economy and the environment.
2010	Met	Many energy markets rely on EIA data being available on schedule, and by meeting these needs, EIA helps to promote efficient energy markets and, to a lesser extent, sound policy making and public understanding. Together, these help to promote a diverse supply and delivery of reliable, affordable, and environmentally sound energy, both now and in the future.
2009	Met	Many energy markets rely on EIA data being available on schedule, and by meeting these needs, EIA helps to promote efficient energy markets and, to a lesser extent, sound policy making and public understanding. Together, these help to promote a diverse supply and delivery of reliable, affordable, and environmentally sound energy, both now and in the future.
2008	Met	Many energy markets rely on EIA data being available on schedule, and by meeting these needs, EIA helps to promote efficient energy markets and, to a lesser extent, sound policy making and public understanding. Together, these help to promote a diverse supply and delivery of reliable, affordable, and environmentally sound energy, both now and in the future.
2007	Met	Many energy markets rely on EIA data being available on schedule. In meeting these needs, EIA helps to promote efficient energy markets and, to a lesser extent, sound policy making and public understanding. Together, these help to promote a diverse supply and delivery of reliable, affordable, and environmentally sound energy, both now and in the future.

Documentation: Internal tracking: EIA selected which products to track, established a schedule, and is tracking the actual and scheduled release dates. The Quality Assurance Team within EIA's Office of Energy Statistics verifies data and calculations and stores the file.

Strategic Goal: 1: Transforming our Energy Systems
Office: Loan Programs
Program: Loan Guarantees
Website: http://lpo.energy.gov/

Performance Goal: *Annual generation capacity from projects receiving DOE loan guarantees that have achieved commercial operations*
Cumulative generation capacity of 0.1 gigawatts in FY 2011

Results:

FY	Target	Commentary
2011	Met	The LPO portfolio includes 19 renewable power generation projects that have reached financial closure and remain active; two of which have achieved commercial operations.

Documentation: LPO website and internal LPO documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Loan Programs
Program: Loan Guarantees
Website: http://lpo.energy.gov

Performance Goal: *Annual manufacturing capacity from projects receiving DOE loan guarantees that have achieved commercial operations*
Cumulative manufacturing capacity of 0.2 GW in FY 2011

Results:

FY	Target	Commentary
2011	Not Met	Target was not met due to bankruptcy of one borrower under Section 1705.

Documentation: LPO website and internal LPO documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Loan Programs
Program: Loan Guarantees
Website: http://lpo.energy.gov/

Performance Goal: *Estimated annual $C0_2$ emissions reductions of projects receiving loan guarantees that have achieved commercial operations compared to 'business as usual' energy generation*
Annual reduction of 200,000 tons of CO_2

Results:

FY	Target	Commentary
2011	Met	200,000+ achieved; avoided greenhouse gas emissions is a presidential goal and a benefit of supporting a portfolio of renewable and clean energy projects.

Documentation: LPO website and internal LPO documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Loan Programs
Program: Loan Guarantees
Website: http://lpo.energy.gov/

Performance Goal: *Loss Rate of ATVM Loans*
A loan loss rate of 4% or less for loans issued under the ATVM program

Results:

FY	Target	Commentary
2011	Met	No losses were incurred in 2011.

Documentation: LPO website and internal LPO documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Loan Programs
Program: Loan Guarantees
Website: http://lpo.energy.gov/

Performance Goal: *Loss Rate of Guaranteed Loans*
A loss rate of 4% or less for guaranteed loans issued under Title XVII

Results:

FY	Target	Commentary
2011	Met	As of September 30, 2011, one borrower of a loan guaranteed under Section 1705 is in bankruptcy. Actual losses will be determined and reported after the conclusion of the bankruptcy proceedings.

Documentation: LPO website and internal LPO documentation.

Strategic Goal: 1: Transforming our Energy Systems
Office: Loan Programs
Program: Loan Guarantees
Website: http://lpo.energy.gov/

Performance Goal: *Obligated Credit Subsidy*
Obligate 100% of Section 1705 Credit Subsidy before September 30, 2011

Results:

FY	Target	Commentary
2011	Not Met	The DOE successfully deployed of over $16 billion to 28 clean energy projects under the Section 1705 loan guarantee program using 77% of available subsidy.

Documentation: LPO website and internal LPO documentation.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Advanced Scientific Computing Research
Website: http://www.science.energy.gov/ascr

Performance Goal: *Improve Computational Science Capabilities*
Improve Computational Science Capabilities -- average annual percentage increase in the computational effectiveness (either by simulating the same problem in less time or simulating a larger problem in the same time) of a subset of application codes

FY 2011 target: >100%

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Increased computational effectiveness of OMEN by 217%, NEMO 5 by 352%, LAMMPS by 200%, OSIRIS by 701%, and eSTOMP by 1500%.
2010	Met	Annual goal met. Computational effectiveness of each application (TD-SLDA, POP, LS3DF, and Denovo) improved by more than 100% for the year (TD-SLDA by 211%; POP by 329.9% ; LS3DF by 260%; and Denovo by of 3,100%).
2009	Met	Annual goal met. Computational effectiveness of each application (CAM, RAPTOR, VisIT, and XGC1) improved by more than 100% for the year.
2008	Met	The Cray XT4 cluster, Jaguar, at Oak Ridge National Laboratory's (ORNL) National Center for Computational Sciences (NCCS) was used for the effort this year to improve performance of the following applications: DCA++; GRYO; and PFLOTRAN. Results indicate all applications improved over 100% against baseline. Reference Report: U.S. DOE SC Office of Advanced Scientific Computing Research FY08 Joule Software Metric SC GG 3.1/2.5.2 Improve Computational Science Capabilities.
2007	Met	--

Documentation: Quarterly and EOY: Test reports on selected codes.

In the first Quarter of fiscal year, the Suite of applications, tools or libraries to be evaluated is proposed by ASCR to ASCAC. After the list is approved by ASCAC an initial set of baseline science problems for each application, or a baseline for scaleing performance for the tools and libraries is defined in detail. The time to solution on each of these baselines, using the application software, tool or library as of the beginning of the fiscal year is determined. Progress towards the 100% goal is determined by monitoring the time to solution of the baseline as the application software, tool or library is improved during the fiscal year or the increase in the size or complexity of the baseline science problem that is possible without increasing the time to solution. Reports detailing these evaluations reside in the files of the ASCR Office (SC-21).

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Advanced Scientific Computing Research
Website: http://www.science.energy.gov/ascr

Performance Goal: *National Energy Research Scientific Computing Center - Capability Computing*
Focus usage of the primary supercomputer at the National Energy Research Scientific Computing Center (NERSC) on capability computing

FY 2011 target: at least 35% of the computing time will be used by computations that require at least 1/8 (4,096 processors) of the NERSC resource

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Averaged 49% of the of the time used on Franklin was used by jobs running 4,096 or more cores.
2010	Met	Annual goal met. 57.7% of the time used on Franklin was used by jobs running with 4,096 or more processors.
2009	Met	Annual goal met. Averaged over the year, 51.9% of the time used on Franklin was used by jobs running with 2,024 or more cores.
2008	Met	54.7% of the year's computing time used at least 1/8 of the NERSC resources.
2007	Met	Annual target of 67.9% was met. Increasing the use of primary supercomputer for large-scale problems enables the Office of Science to answer complex scientific questions sooner -- keeping U.S. research on the frontiers of science.

Documentation: Quarterly and EOY:

This data comes directly from the batch queue accounting system at NERSC. The Number of CPU hours accounted for by jobs that use at least 1/8 or the NERSC resources (4096 processors) is divided by the total number of CPU hours delivered to all jobs in the batch system. Reports detailing this progress reside in the files of the ASCR Office (SC-21).

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Basic Energy Sciences
Website: http://www.science.energy.gov/bes

Performance Goal: *BES Const/MIE Cost & Schedule*
Cost-weighted mean percent variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects

FY 2011 target: cost and schedule variance are both less than 10%

Results:

FY	Target	Commentary
2011	Met	Annual goal met. 1.6% (cost variance) and -3.6% (schedule variance) References: Reports from the DOE Federal Project Directors on all BES construction projects reside in the files of the Office of Basic Energy Sciences (SC-22).
2010	Met	Annual Goal met. 0.9% (cost variance) and 1.7% (schedule variance) References: Reports from the DOE Federal Project Directors on all BES construction projects reside in the files of the Office of Basic Energy Sciences (SC-22).
2009	Met	Goal Met. 2.5% (cost variance) and -5.9% (schedule variance) References: Reports from the DOE Federal Project Directors on all BES construction projects reside in the files of the Office of Basic Energy Sciences (SC-22). Final results for FY 2009 will be submitted when available (September 2009 PARS data not yet available).
2008	Met	2.0% (cost variance) and -2.2% (schedule variance).
2007	Not Met	Annual target not met. Results: -5.8% (cost variance) and -11.0% (schedule variance). Due to the FY 2007 Continuing Resolution (H.J.R 20), the Linac Coherent Light Source (LCLS) project experienced a reduction of $7,740,000, including $4,740,000 in construction funds and $3,000,000 in Other Project Costs, and a six month delay in receiving FY 2007 appropriated funding, which has driven the LCLS project schedule variance 11.0% behind the original baseline. Controlling project costs and meeting construction schedules enables the Department to conduct world-class scientific research across a wide-range of disciplines.

Documentation: BES Projects include those that have an approved performance baseline at the start of FY 2011, which include: SING-I, SING-II, and NSLS-II.

Supporting data reside in the DOE Office of Engineering and Construction Management's (OECM, ME-50) Project Assessment and Reporting System (PARS) and with Basic Energy Science's Division of Scientific User Facilities (SC-22.3).

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Basic Energy Sciences
Website: http://www.science.energy.gov/bes

Performance Goal: *BES Facility Ops*
Achieve an average operation time of the scientific user facilities as a percentage of the total scheduled annual operating time of greater than 90%

FY 2011 target: 90% of scheduled operating time

Results:

FY	Target	Commentary
2011	Met	Annual goal met. 101.3% (average annual operating time at BES facilities as a percentage of planned scheduled time; i.e., 36,366 actual total hours delivered to users versus 35,900 total planned hours) References: Final fourth quarter progress reports of FY 2011 operating hours submitted to BES by 8 BES user facilities (3 neutron sources and 5 light sources). The actual delivered hours of the individual user facilities in FY11 were: NSLS 5,885; SSRL 4,775; ALS 4,916; APS 4,906; LCLS 3,925; HFIR 4,268; Lujan 2,691; and SNS 5,000 for a total of 36,366 hours. These facilities reports reside in the files of the Office of Basic Energy Sciences (SC-22).
2010	Met	Annual Goal met. 101.1% (average annual operating time at BES facilities as a percentage of planned scheduled time; i.e., 32,562 actual total hours delivered to users versus 32,200 total planned hours)
2009	Met	Goal Met. 103.5% (average annual operating time at BES facilities as a percentage of planned scheduled time; i.e., 31,785 actual total hours delivered to users versus 30,700 total planned hours) References: Final fourth quarter Joule progress reports of FY 2009 operating hours submitted to BES by 7 BES user facilities (3 neutron sources and 4 light sources). These facilities reports reside in the files of the Office of Basic Energy Sciences (SC-22).
2008	Met	101.9% (average annual operating time at BES facilities as a percentage of planned scheduled time; i.e., 29,137 actual total hours delivered to users versus 28,580 total planned hours). Achieving this target ensures full use of the seven scientific user facilities and justifies investments in these crucial facilities.
2007	Met	Annual target met. Results: 102.1% (27,010 actual total hours delivered to users versus 26,450 total planned hours) Achieving this target ensures full use of the seven scientific user facilities and justifies investments in these crucial facilities.

Documentation: Supporting documents consist of the required quarterly and annual reports submitted to BES by the BES user facilities at the completion of each quarter and at the end of the fiscal year. These final reports reside in the files of the Office of Basic Energy Sciences (SC-22).

The total planned operating hours for this goal is obtained from the planned operating hours of these individual user facilities in FY11: NSLS 5,400; SSRL 4,900; ALS 4,700; APS 5,000; LCLS 4,100; HFIR 3,900; Lujan 3,000; and SNS 4,900 for a total of 35,900 hours (32,310 hours is 90%).

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Basic Energy Sciences
Website: http://www.science.energy.gov/bes

Performance Goal: *Spatial Resolution*
Maintain spatial resolutions for imaging in the hard x-ray region of <100 nanometers and in the soft x-ray region of <18 nm, and spatial information limit for an electron microscope of 0.05 nanometers

Results:

FY	Target	Commentary
2011	Met	Annual goal met: Hard x-ray - 90 nanometers Soft x-ray - 15 nanometers Electron microscope - 0.05 nanometers References: Hard x-ray - The result was achieved at experimental station 34-ID-E of the Advanced Photon Source at ANL. The report of the unpublished results resides at the Office of Basic Energy Sciences (SC-22). Soft x-ray - W. Chao, B. D. Harteneck, J. A. Liddle, E. H. Anderson, D. T. Attwood, "Soft X-ray microscopy at a spatial resolution better than 15nm," Nature, 435, 1210-1213 (2005) . Electron microscope - Rolf Erni, Marta D. Rossell, Christian Kisielowski, and Ulrich Dahmen, "Atomic-Resolution Imaging with a Sub-50-pm Electron Probe," Physical Review Letters 102, 096101 (2009).
2010	Met	Annual goal met: Hard x-ray - 90 nanometers Soft x-ray - 15 nanometers Electron microscope - 0.05 nanometers
2009	Met	Goal Met. Hard x-ray - 90 nanometers Soft x-ray - 15 nanometers Electron microscope - 0.05 nanometers References: Hard x-ray - The result was achieved at experimental station 34-ID-E of the Advanced Photon Source at ANL. The report of the unpublished results resides at the Office of Basic Energy Sciences (SC-22). Soft x-ray - W. Chao, B. D. Harteneck, J. A. Liddle, E. H. Anderson, D. T. Attwood, "Soft X-ray microscopy at a spatial resolution better than 15nm," Nature, 435, 1210-1213 (2005) . Electron microscope - Rolf Erni, Marta D. Rossell, Christian Kisielowski, and Ulrich Dahmen, "Atomic-Resolution Imaging with a Sub-50-pm Electron Probe," Physical Review Letters 102, 096101 (2009).
2008	Met	Hard x-ray - 90 nanometers Soft x-ray - 15 nanometers Electron microscope - 0.078 nanometers References: Hard x-ray - The result was achieved at experimental station 34-ID-E of the Advanced Photon Source at ANL. The report of the unpublished results resides at the Office of Basic Energy Sciences (SC-22). Soft x-ray - W. Chao, B. D. Harteneck, J. A. Liddle, E. H. Anderson, D. T. Attwood, "Soft X-ray microscopy at a spatial resolution better than 15nm," Nature, 435, 1210-1213 (2005) .

		Electron microscope - P. D. Nellist, M. F. Chisholm, N. Dellby, O. L. Krivanek, M. F.Murfitt, Z. S. Szilagyi, A. R. Lupini, A. Borisevich, W. H. Sides Jr., S. J. Pennycook, "Direct sub-angstrom imaging of a crystal lattice," Science, 305,1741 (2004).
2007	Met	Annual target met. Results: Hard x-ray - 90 nanometers; Soft x-ray - 15 nanometers; Electron microscope - 0.078 nanometers. This allows scientists to improve the clarity from which they can “see” very small objects such as viruses or even atoms, which have a size on the scale of nanometers.
Documentation: No further quantitative improvements are expected in these measures this year. Performance levels for spatial resolution have reached the maximum for the current suite of available instruments. This target is a measure of SC's intent to maintain the maximum level of performance for users of the current SC facilities until the next generation of instruments and facilities becomes available at NSLS-II.		

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Basic Energy Sciences
Website: http://www.science.energy.gov/bes

Performance Goal: *Temporal Resolution*
Maintain x-ray pulses that are <70 femtoseconds in duration and have an intensity of >1 trillion photons per pulse (>10^{12} photons/pulse)

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Achieved X-ray pulses of less than 70 femtoseconds in duration with an intensity of greater than 1 trillion photons per pulse. References: Results are from the Linac Coherent Light Source at the SLAC National Accelerator Laboratory (RE: "Science Begins at the World's Most Powerful X-ray Laser," SLAC Press Release, November 2, 2009): P. Emma, et al., "First lasing and operation of an ångstrom-wavelength free-electron laser," Nature Photonics 4, 641 (September 2010); see Table 1.
2010	Met	Annual Goal met: 70 femtosecond pulses with 100 million photons per pulse. References: Results are from the Sub-Picosecond Pulse Source at the Stanford Linear Accelerator Center: A. M. Lindenberg, et al., "Atomic-Scale Visualization of Inertial Dynamics", Science 308, 392 (2005); A. L. Cavalieri, et al., "Clocking Femtosecond X Rays", Phys. Rev. Lett. 94, 114801 (2005); K. J. Gaffney, et al., "Observation of Structural Anisotropy and the Onset of Liquidlike Motion During the Nonthermal Melting of InSb", Phys. Rev. Lett. 95, 125701 (2005).
2009	Met	Goal met. 70 femtosecond pulses with 100 million photons per pulse References: Results are from the Sub-Picosecond Pulse Source at the Stanford Linear Accelerator Center: A. M. Lindenberg, et al., "Atomic-Scale Visualization of Inertial Dynamics", Science 308, 392 (2005); A. L. Cavalieri, et al., "Clocking Femtosecond X Rays", Phys. Rev. Lett. 94, 114801 (2005); K. J. Gaffney, et al., "Observation of Structural Anisotropy and the Onset of Liquidlike Motion During the Nonthermal Melting of InSb", Phys. Rev. Lett. 95, 125701 (2005).
2008	Met	70 femtosecond pulses with 100 million photons per pulse References: Results are from the Sub-Picosecond Pulse Source at the Stanford Linear Accelerator Center: A. M. Lindenberg, et al., "Atomic-Scale Visualization of Inertial Dynamics", Science 308, 392 (2005); A. L. Cavalieri, et al., "Clocking Femtosecond X Rays", Phys. Rev. Lett. 94, 114801 (2005); K. J. Gaffney, et al., "Observation of Structural Anisotropy and the Onset of Liquidlike Motion During the Nonthermal Melting of InSb", Phys. Rev. Lett. 95, 125701 (2005).
2007	Met	Annual target met. 70 femtosecond pulses with 100 million photons per pulse. Achieving this target allows scientists to "see" fast events, such as chemical reactions and the folding of proteins.

Documentation: No further quantitative improvements are expected in these measures this year. Performance levels for temporal resolution have reached the maximum for the current suite of available instruments. This target is a measure of SC's intent to maintain the maximum level of performance for users of the current SC facilities until the next generation of instruments and facilities becomes available at LCLS-II.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Biological and Environmental Research
Website: http://www.science.energy.gov/ber

Performance Goal: *BER Improve Climate Models*
Develop a coupled climate model with fully interactive carbon and sulfur cycles, as well as dynamic vegetation to enable simulations of aerosol effects, carbon chemistry, and carbon sequestration by the land surface and oceans and the interactions between the carbon cycle and climate

FY 2011 target: Earth system model to be used in generating scenarios for the IPCC Fifth Assessment Report and provide integrated aerosol sub-model that includes direct and indirect forcing

Results:

FY	Target	Commentary
2011	Met	Annual goal met. The document titled, "Estimate of Future Aerosol Direct and Indirect Effects" can be found at http://asr.science.energy.gov/science/performance-metrics/2011/doe-sc-asr-11-004.pdf. The report summarizes results of a future IPCC AR5 (RCP8.5) scenario.
2010	Met	Annual goal met. A new parameterization for aerosol effects on cloud drizzle for incorporation into atmospheric modelshas been delivered.
2009	Met	Annual goal met.
2008	Met	Progress is reported in Atmospheric Properties from the 2006 Niamey Deployment and Climate Simulation with a Geodesic Grid Coupled Climate Model. A decade-long control simulation using geodesic grid coupled climate model at a resolution ~ 250 km was completed and compared with observations. The coupled model maintains a fairly realistic state after 10 simulated years. A single data file includes the time-series of aerosol and dust properties for the 2006 Niamey deployment. The data and documentation are available from the ARM Climate Research Facility Archive (http://www.archive.arm.gov/nimdust).
2007	Met	Annual target met. The new cloud microphysics scheme is further tested in CAM3 climate simulations and results are evaluated using the ARM measurements. The new scheme leads to the improvement of the cloud fraction and reduction of temperature bias in the tropical tropopause. The predicted ice water content in the CAM3 with the new scheme is in better agreement with the ARM observation at the SGP site for the mixed-phase clouds and with the Aura MLS data than that in the standard CAM3. Achieving this target moves the program closer to climate simulations that will help determine energy policy relative to global climate change.

Documentation: Quarterly – E-mails from the designated performers reporting the research results (per documented control process).
EOY – E-mails reporting the results and publication/availability of the results (per documented control process).
Report is available at: http://asr.science.energy.gov/science/performance metrics

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Biological and Environmental Research
Website: http://www.science.energy.gov/ber

Performance Goal: *Climate Facility Ops*
The achieved operation time of the (Climate Change Research scientific user facilities) ARM/ACRF as a percentage of the total scheduled annual operating time is greater than 98%.

FY 2011 target: 98% of total scheduled operating time (annual: 100% = 8,219.4 hours; 98% = 7,884 hours)

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Achieved 8,109.5 hours.
2010	Met	Annual Goal met. The ARM facility operated for 8,178 hours, which exceeds the annual goal of 7,726 hours.
2009	Met	Annual goal met.
2008	Met	The ARM facility operated for 8,320 hours, and thus exceeded the annual goal by 594 hours.
2007	Met	The FY 2007 annual target met; achieved an average of 104%. Achieving this target, scientists can optimally use the facilty's capability.

Documentation: Quarterly – E-mails reporting the progress (per documented control process).
EOY – E-mails reporting the results and data availability (per documented control process).
E-mails reside at: http://www.arm.gov/about/stats

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Biological and Environmental Research
Website: http://www.science.energy.gov/ber

Performance Goal: *Determine Scalability of Laboratory Results in Field Experiments*
Determine the dominant processes controlling the fate and transport of contaminants in subsurface environments and develop quantitative numerical models to describe contaminant mobility at the field scale

FY 2011 target: Refine subsurface transport models by developing computational methods to link important processes impacting contaminant transport at smaller scales to the field scale

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Four reports were prepared describing advances in computational methods to describe the major processes controlling contaminant mobility in subsurface environments at the field scale. The full text is available at the following weblink: http://esd.lbl.gov/research/projects/ersp/generalinfo/milestones/ersd_data11.html
2010	Met	Annual goal met. A report that outlines a new experimental design that will better account for site complexity is posted at: http://esd.lbl.gov/research/projects/ersp/generalinfo/milestones/ersd_data10.html.
2009	Met	Annual goal met.
2008	Met	Goal met. Identified the critical redox reactions and metabolic pathways involved in the transformation/ sequestration of at least one key DOE contaminant, uranium, in a field environment. See the reports available on http://www.lbl.gov/ERSP/generalinfo/milestones/ersd_data08.html.
2007	Met	Implementation Plan progress report from the Oak Ridge Integrated Field Challenge (IFC) project announced in the first quarter of FY2007 is posted at http://www.lbl.gov/ERSP/generalinfo/milestones/ersd_data07.html. Success represents incremental progress toward determining the dominant processes controlling the fate and transport of contaminants in subsurface environments and developing quantitative numerical models to describe contaminant mobility at the field scale.

Documentation: Quarterly – E-mails from the designated performers reporting the research results and field site experiment results (per documented control process).
EOY – E-mails reporting the results and publication/availability of the results (per documented control process).
E-mails reside at: http://www.lbl.gov/ERSP/generalinfo/milestones.html and/or http://www.lbl.gov/NABIR/generalinfo/

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Biological and Environmental Research
Website: http://www.science.energy.gov/ber

Performance Goal: *Environmental Facility Ops*
Achieved operation time of the (Environmental Remediation scientific user facility) EMSL as a percentage of the total scheduled annual operating time is greater than 98%

FY 2011 target: 98% of total scheduled operating time (annual: 100% = 4259; 98% = 4174)

Results:

FY	Target	Commentary
2011	Met	Annual goal met. EMSL achieved 4247 operational hours and has met the annual goal of 4174 total annual operating hours. The report is available on http://www.emsl.pnl.gov/about/reports
2010	Met	For the year to date, EMSL has achieved 4329 operational hours and exceeds the annual goal of 4265 hours.
2009	Met	Annual goal met. EMSL achieved 4376.5 operational hours.
2008	Met	For the year to date, EMSL achieved 4340 operational hours and has met the annual goal of >98% of 4365 total possible operational hours.
2007	Met	Annual target met; achieved an average of 99.9%. Achieving this target, scientists can optimally use the facilty's capability.

Documentation: Quarterly – E-mails reporting the progress (per documented control process).
EOY – E-mails reporting the results and data availability (per documented control process).
E-mails reside at: http://www.emsl.pnl.gov/homes/hours.shtml

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Biological and Environmental Research
Website: http://www.science.energy.gov/ber

Performance Goal: *Increase the rate and decrease the cost of DNA sequencing*
Increase by 10% the number (in billions) of high quality (less than one error in 10,000) bases of DNA from microbial and model organism genomes sequenced the previous year, and decrease by 10% the cost (base pair/dollar) to produce these base pairs from the previous year's actual results

FY 2011 target: Sequence 6,644 billion base pairs at a rate of 78,782 bp/$1, based on FY10 actual of 6,040 billion base pairs at a rate of 87,536 bp/$1

Results:

FY	Target	Commentary
2011	Met	Annual goal met. The JGI sequenced 29,903 billion base pairs of high quality DNA, exceeding the target goal, at a rate of 427,186 bp/$1. http://www.jgi.doe.gov/sequencing/statistics.html.
2010	Exceeded	Annual goal met. JGI exceeded the pair production with 6.04 Trillion base pairs of DNA were sequenced. JGI also exceeded the base pair produced per dollar: actual was 87,536 bp/$1 compared to a goal of 15,942 bp/$1.
2009	Met	Goal met. 1003.9 billion base pairs of high quality DNA sequenced, (representing 397% of the yearly target) at 15,430 bp/$.
2008	Met	Sequenced 125.51 billion base pairs at a rate 2350 bp/$
2007	Not Met	Annual target not met. 38.95 Billion bases (97% of goal) achieved. However the cost milestone was achieved: JGI produced 714 base pairs (vice goal of 644) per $1. Achieving this target increases our body of knowledge about DNA from which scientists hope to find new ways to treat or avoid illness, as well as develop new pharmaceutical and agricultural products, energy sources, industrial processes, and solutions to a variety of environmental problems.

Documentation: Quarterly – E-mails reporting the progress of actual counts of base pairs sequenced (per documented control process). EOY – E-mails reporting the results and data availability (per documented control process). The number of base pairs will be divided by the total funding to the Joint Genome Institute to calculate the cost of DNA sequencing.
Joint Genome Institute: http://www.jgi.doe.gov/sequencing/statistics.html.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Biological and Environmental Research
Website: http://www.science.energy.gov/ber

Performance Goal: *Life Sci Facility Ops*
The achieved operation time of the (Biological System Science user facility) JGI as a percentage of the total scheduled annual operating time is greater than 98%.

FY 2011 target: 98% of total scheduled operating time (annual: 100% = 8,400; 98% = 8,232)

Results:

FY	Target	Commentary
2011	Met	Annual goal met. JGI operational for 8760 hours, 104% of the target annual goal. http://www.jgi.doe.gov/sequencing/statistics.html.
2010	Met	Annual goal met. JGI operated at 104% of scheduled operating time (actual hours were 8,712, scheduled hours 8,400).
2009	Met	Annual goal met. The PGF achieved 8626 operational hours.
2008	Not Met	JGI operating hours were 7,704 or 94% of goal (8,232). This reflects the December shutdown for ergonomic safety.
2007	Met	Annual target met; achieved an average of 102%. Achieving this target, scientists can optimally use the facilty's capability

Documentation: Quarterly – E-mails reporting the progress (per documented control process).
EOY – E-mails reporting the results and data availability (per documented control process).
E-mails reside at: http://www.jgi.doe.gov/sequencing/statistics.html

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Fusion Energy Sciences
Website: http://www.science.energy.gov/fes/

Performance Goal: *FES Const/MIE Cost & Schedule*
Cost-weighted mean percent variance from established cost and schedule baselines for the NSTX Upgrades MIE kept to less than 10%

FY 2011 target: cost and schedule variance are both less than 10%

Results:

FY	Target	Commentary
2011	Met	Annual goal met. SPI=0.97 CPI=1.02
2008	Data Not Available	This annual target was closed out due to the cancellation of the National Compact Stellarator Experiment (NCSX) by the Office of Science in May 2008.
2007	Not Met	Goal Not Met. NCSX is assessed as "red" because it was unable to meet the currently approved baseline. Controlling project costs and meeting construction schedules enables the Department to conduct world-class scientific research across a wide-range of disciplines.

Documentation: CD-2 for the NSTX Upgrades MIE project is expected in December 2010. Information is available in the PARS II System.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Fusion Energy Sciences
Website: http://www.science.energy.gov/fes/

Performance Goal: *FES Facility Based Experiments*
Conduct experiments on the major fusion facilities (DIII-D, Alcator CMod, NSTX) leading toward the predictive capability for burning plasmas and configuration optimization

FY 2011 target: Improve the understanding of the physics mechanisms responsible for the structure of the pedestal and compare with the predictive models described in the companion theory milestone. Perform experiments to test theoretical physics models in the pedestal region on multiple devices over a broad range of plasma parameters (e.g., collisionality, beta, and aspect ratio). Detailed measurements of the height and width of the pedestal will be performed, augmented by measurements of the radial electric field. The evolution of these parameters during the discharge will be studied. Initial measurements of the turbulence in the pedestal region will also be performed to improve understanding of the relationship between edge turbulent transport and pedestal structure.

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Experiments were conducted on DIII-D, NSTX, and C-Mod. Multi-machine comparisons of experimental data with several theoretical models were performed to clarify the relative importance of various physics mechanisms in the plasma edge pedestal. Pedestal data over a wide range of plasma parameters were analyzed with multiple codes, and edge turbulence was measured to elucidate the role of turbulent transport in establishing the pedestal structure. The joint research report summarized the understanding gained, the implications for ITER, and recommendations for future work.
2010	Met	Annual goal met. Experiments were conducted on DIII-D, NSTX, and C-Mod. Fundamental characteristics of heat transport and divertor heat flux profiles in the tokamak scrape- off layer (SOL) plasma were examined. The results achieved were used to strengthen the basis for projecting divertor conditions in ITER, and to identify critical research areas to improve the extrapolation.
2009	Met	Goal met. Experiments were conducted on DIII-D, NSTX, and C-Mod. Fundamental processes governing particle balance were identified. The results achieved were used to improve extrapolation to planned ITER operation.
2008	Met	Good progress was made in all areas of rotation physics as a result of the experiments on NSTX, DIII-D, and C-Mod. Completely new phenomena were discovered, and indications from former experiments were confirmed and extended. Common underlying physics elements controlling the rotation dynamics and momentum transport were identified in the three experiments. Greater coupling with theory was also accomplished, giving increased confidence in extrapolation to ITER and burning plasmas in general. The final report summarized the data and analysis contributing to estimating the magnitude, and assessing the impact, of rotation on ITER.
2007	Met	Annual target met. Completed a series of energetic particle-related experiments and identified three Alfven Eigenmodes. Carried out a comprehensive analysis of the behavior of the modes and their effect on the confinement of fast particles, and compared the results with published theoretical models. These experiments provide critical data on plasma behavior needed to eventually predict the performance of burning plasmas.

Documentation: Verification and validation website is at: http://www.science.doe.gov/ofes/performancetargets.shtml
This site provides quarterly progress reports and documentation of achievement for this annual target; results will be updated on a timely basis.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Fusion Energy Sciences
Website: http://www.science.energy.gov/fes/

Performance Goal: *FES Facility Operations*
Average achieved operational time of major national fusion facilities as a percentage of total planned operational time of greater than 90%

FY 2011 target: 90% of scheduled operating time

Results:

FY	Target	Commentary
2011	Not Met	Annual goal not met. DIII-D completed 14.5 weeks of experiments on September 28 (103% of planned 14 weeks). C-Mod completed 14.5 weeks of experiments on April 6 (97% of planned 14 weeks). Due to a toroidal field coil failure in the fourth quarter, NSTX was only able to complete 4.2 weeks of experiments out of the planned 14 weeks (30%). A total of 33.2 weeks of operations was completed out of the planned total of 43, representing 77% achieved operating time and falling short of the 90% target.
2010	Met	Annual goal met. A total of 45.6 weeks of baseline operations exceeded the target of 38 weeks (90% of planned operating time of 42 weeks.) - DIII-D completed 15.2 weeks of experiments on April 6 (plus 3 additional weeks supported with Recovery Act funding). - NSTX completed 14.4 weeks of experiments on September 24 (plus 1 additional week supported with Recovery Act funding). - C-Mod completed 16 weeks of experiments on September 10 (plus 5 additional weeks supported with Recovery Act funding).
2009	Met	Annual goal met. DIII-D completed 14 weeks of experiments on July 27. NSTX completed 11 weeks of experiments on July 7. C-Mod completed 9.1 weeks of experiments on September 25. A total of 34.1 weeks of operations exceeded the target of 34 weeks (90% of planned operating time.)
2008	Met	DIII-D completed 19 weeks of experiments on August 13. NSTX completed 16.6 weeks of experiments on July 14. C-Mod completed 15.7 weeks of experiments on May 23. A total of 51.3 weeks of operations exceeded the target of 51 weeks.
2007	Met	Annual target met. A total of 40.1 weeks of operations exceeded the target of 35 weeks; 114.6% > 90%." with "Annual target met. DIII-D completed 12.8 weeks of experiments on August 8. NSTX finished 12.6 weeks of research operations on June 22. C-Mod completed 14.7 weeks of experiments on August 31. A total of 40.1 weeks of operations exceeded the target of 35 weeks or facilities operated at 114.6% of schedule/planned operations.A total of 40.1 weeks of operations exceeded the target of 35 weeks; 114.6% > 90%.

Documentation: Verification and validation website is at: http://www.science.doe.gov/ofes/performancetargets.shtml
This site provides quarterly progress reports and documentation of achievement for this annual target; results will be updated on a timely basis.

Strategic Goal: al 2: The Science and Engineering Enterprise
Office: Science
Program: Fusion Energy Sciences
Website: http://www.science.energy.gov/fes/

Performance Goal: *FES Simulation Resolution*
Continue to increase resolution in simulations of plasma phenomena -- optimizing confinement and predicting the behavior of burning plasmas require improved simulations of edge and core plasma phenomena, as the characteristics of the edge can strongly affect core confinement

FY 2011 target: A focused analytic theory and computational effort, including large-scale simulations, will be used to identify and quantify relevant physics mechanisms controlling the structure of the pedestal. The performance of future burning plasmas is strongly correlated with the pressure at the top of the edge transport barrier (or pedestal height). Predicting the pedestal height has proved challenging due to a wide and overlapping range of relevant spatiotemporal scales, geometrical complexity, and a variety of potentially important physics mechanisms. Predictive models will be developed and key features of each model will be tested against observations, to clarify the relative importance of various physics mechanisms, and to make progress in developing a validated physics model for the pedestal height.

Results:

FY	Target	Commentary
2011	Met	Annual goal met. This work improved our knowledge of the physical mechanisms responsible for the properties and characteristics of the H-mode pedestal. In addition to clarifying the roles of the various physical processes involved, it also led to the improvement of various simulation codes since they had to be upgraded to model data under the challenging conditions of the pedestal. Among the specific benefits of this work was increasing confidence in the predictive capability of the widely-used peeling-ballooning theory.
2010	Met	Annual goal met. The 2010 effort significantly advanced our predictive understanding of toroidal momentum transport and rotation, including intrinsic rotation. It established that toroidal momentum transport is driven by parallel and perpendicular Reynolds stresses, clarified the role of residual stress and other off-diagonal contributions to the momentum flux and their role in driving intrinsic rotation, and identified several mechanisms responsible for the symmetry breaking creating the residual stress.
2009	Met	Goal was met. High resolution simulations of edge plasma turbulence advanced our understanding of H-mode physics.
2008	Met	The simulations of ITER-relevant modeling of lower hybrid current drive experiments on Alcator C-Mod were done with 2047 poloidal modes and 980 radial elements. These new results were published in "Communications in Computer Physics" in 2008.
2007	Met	Annual target met. Analyzed possible ITER reversed shear discharges. Looked at a variety of plasma states to determine the linear stability of toroidal mode number n=1-15 TAE modes. With this information, prepared a comprehensive review of the TAE energetic particle stability of ITER discharges in three operating regimes. Achieving this target allows scientists to determine which instabilities are expected to be observed in ITER. This is the starting point to measuring these instabilities and determining their impact on ITER.

Documentation: Verification and validation website is at: http://www.science.doe.gov/ofes/performancetargets.shtml
This site provides quarterly progress reports and documentation of achievement for this annual target; results will be updated on a timely basis.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: High Energy Physics
Website: http://www.science.energy.gov/hep

Performance Goal: *CDF/D-Zero Detector*
Deliver within 20% of baseline estimate a total integrated amount of data (in inverse picobarns [pb^{-1}]) to the CDF and D-Zero detectors at the Tevatron

FY 2011 target: Total is 2,000 pb^{-1}, within 20% is 1,600 pb^{-1}

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Achieved 2,546 pb^{-1}
2010	Met	Delivered 2,477 pb^{-1}
2009	Met	Annual goal met. Achieved 1,939.42 pb^{-1}
2008	Met	Met goal. Tevatron delivered 1,786 pb^{-1} for the year.
2007	Met	Annual target met.Tevatron delivered 1,311 pb^{-1} to CDF and D-Zero. Achieving this target produces experimental data that advances our knowledge of the nature of fundamental particles and the physical laws that govern matter, energy, space and time

Documentation: http://www-bdnew.fnal.gov/operations/lum/supertable.html. This page, "Quarterly Performance Numbers," lists the number of inverse picobarns for each quarter. Target performance is determined from the average integated luminosity (average of CDF and D-Zero).

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: High Energy Physics
Website: http://www.science.energy.gov/hep

Performance Goal: *HEP Const/MIE Cost and Schedule*
Achieve less than 10% for both the cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects

Results:

FY	Target	Commentary
2011	Met	Annual goal met. CPI varience: 97%; SPI varience: 96%
2010	Met	All projects met the required variances for the year.
2009	Met	Annual goal met. CPI 1.3%, SPI: 7.4%
2008	Met	Cost weighted average variences for Daya Bay Reactor Neutrino Experiment and Dark Energy Survey is 1.04 for cost and 0.95 for schedule.
2007	Met	Annual target met. Cost variance for ATLAS is +0.8%. Cost variance for CMS is +1.1%. Total project cost-weighted average is +1.0%. Schedule variance for both ATLAS and CMS is less than 0.1%. Therefore, the total project cost-weighted average is less than 0.1%. Controlling project costs and meeting construction schedules enables the Department to conduct world-class scientific research across a wide-range of disciplines.

Documentation: Derived from Quarterly Project Reports for the following projects:
1. NOvA; 2. Reactor Neutrino Detector; 3. Dark Energy Survey.
Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project.
Supporting documentation resides in the files of the HEP Office (SC-25); a web site is under development.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: High Energy Physics
Website: http://www.science.energy.gov/hep

Performance Goal: *HEP Facility Ops*
Achieve greater than 80% average operation time of the scientific user facilities (the Fermilab Tevatron) as a percentage of the total scheduled annual operating time

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Achieved 81% of scheduled operating time.
2010	Met	Uptime for the year was 89.4%.
2009	Met	Annual goal met. Achieved 83.7% of scheduled operating time.
2008	Met	Met goal. Fermi had 15.6% and SLAC had 14.6% unscheduled downtime for the year. The weighted averag is 15.4%
2007	Met	Annual target met. Fermi operation time was 83% in FY07 and SLAC operation time was 81%. Overall HEP average is 82%. Achieving this target ensures full use of the HEP scientific user facilities and justifies investments in these crucial facilities.

Documentation: Derived from letters from Lab Directors or designee. Fermi data are reported at http://www-bdnew.fnal.gov/operations/lum/supertable.html.

The scientific user facilities and scheduled hours:
- Fermilab Tevatron, 5500
for a total of 5040 hours (4400 hours is 80%).

Unscheduled downtime reported by each facility is averaged, weighted by the Facility Operations cost. Facility Operations costs are defined in the Facilities Summary section of the HEP FY 2009 budget submission.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: High Energy Physics
Website: http://www.science.energy.gov/hep

Performance Goal: *HEP MINOS Detector*
Measure within 20% of the total integrated amount of data (in protons on-target) delivered to the detectors using the NuMI facility

FY 2011 target: 2.7 x10^{20} protons on target to the MINOS. (80% is 2.2 x 10^{20})

Results:

FY	Target	Commentary
2011	Met	Annual goal met. Measured 2.2x10^{20} protons on target.
2010	Met	Measured 3.2 x 10^{20} protons on target.
2009	Met	Annual goal met. Achieved 2.24x10^{20} protons-on-target.
2008	Met	Met goal. Total protons on the NuMI target was 1.97 x 10^{20} for the year.
2007	Met	Annual target met. NuMI delivered 1.9 x 10^{20} protons-on-target. Achieving this target produces experimental data that advances our knowledge of the nature of fundamental particles and the physical laws that govern matter, energy, space and time.

Documentation: http://www-bdnew.fnal.gov/operations/lum/supertable.html
This page, "Quarterly Performance Numbers," lists the number of protons-on-target for each quarter.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Nuclear Physics
Website: http://www.science.energy.gov/np

Performance Goal: *ATLAS - HRIBF Detectors*
Achieve at least 80% of the integrated delivered beam used effectively for all experiments run at each of the Argonne Tandem Linac Accelerator System (ATLAS) and the Holifield Radioactive Ion Beam (HRIBF) facilities measured as a percentage of the scheduled delivered beam considered effective for each facility

Results:

FY	Target	Commentary
2011	Met	Annual Goal Met. Percentage of integrated delivered beam considered effective for ATLAS (93%) and HRIBF (80.5%).
2010	Met	Annual goal met. Percentage of integrated delivered beam considered effective for ATLAS (91%) and HRIBF (82%).
2009	Not Met	Annual goal not met. Annual goal was met for ANL/ATLAS but not for ORNL/HRIBF.
2008	Met	Goal met. Recorded 43.7 billion events at ATLAS and 17 billion events at HRIBF.
2007	Met	Annual Target met. Achieved 27.6 billion events at ATLAS and 7.1 billion events at HRIBF. Scientists accelerate and collide radioactive and stable beams on targets to: investigate new regions of nuclear structure; studying interactions in nuclear matter like those occurring in neutron stars; and determining the reactions that created the nuclei of the chemical elements inside stars and supernovae.

Documentation: The percentage of integrated delivered beam used effectively by the experiments is determined by the experimenters that are collecting data through a survey. Records of the fractional amount of beam that satisfies the experimenters' requirements are documented along with the criteria used and how the beam is monitored and kept at each laboratory.

Achieving 100% of integrated delivered beam that was used effectively means that 100% of the annual beam allocated to the experiments satisfied the experimenters' criteria for producing useful data.

Quarterly: E-mail from ANL and ORNL management to NP program office reporting the cumulative percentage fractional integrated delivered beam achieved for that quarter.

EOY: Official letters from ANL and ORNL management to NP Office reporting and certifying the total percentage integrated delivered beam achieved for the year.

Documentation resides in the Office of Nuclear Physics (SC-26) files.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Nuclear Physics
Website: http://www.science.energy.gov/np

Performance Goal: *CEBAF detector*
Achieve at least 80% of the integrated delivered beam used effectively for experimental research in each of Halls A, B and C at the Continuous Electron Beam Accelerator Facility (CEBAF) measured as a percentage of the scheduled delivered beam considered effective for each Hall

Results:

FY	Target	Commentary
2011	Met	Annual goal met. The integrated delivered beam used effectively that meets the 80% goal was 101% for Hall A , 70% for Hall B, and 82% for Hall C. This averages to 84%.
2010	Not Met	Annual goal not met. The values of the 3 Halls at CEBAF are averaged for an End of the Year result of 68%.
2009	Not Met	Annual goal not met. Annual goal was met for Halls A and B, but not met for Hall C.
2008	Met	Goal met. Recorded 3.2 billion events in Hall A; 13.7 billion events in Hall B; and 3.26 billion events in Hall C.
2007	Met	Annual Target met. Recorded 2.49 billion events in Hall A, 12.42 billion events in Hall B, and 3.01 billion events in Hall C.Achieving this target allows scientists to study the structure of the nucleon and light nuclei. These accomplishments allow precise measurements of fundamental properties of the proton, neutron and simple nuclei for comparison with theoretical calculations to provide a quantitative understanding of the quark sub-structure.

Documentation: The percentage of integrated delivered beam used effectively by the experiments in each Hall is determined by the collection of data meeting the experimenter's requirements. Records of the fractional amount of beam that satisfies the experimenters' requirements are documented along with the criteria used and how the beam is monitored and kept at the laboratory. The values from each Hall are then averaged for the end of year result.

Achieving 100% of integrated delivered beam that was used effectively means that 100% of the annual beam allocated to the experiments satisfied the experimenters' criteria for producing useful data.

Quarterly: Email from TJNAF management to NP program office reporting the cumulative percent fractional integrated delivered beam achieved for Hall A, B, C at CEBAF for that quarter.

EOY: Official letter from TJNAF management to NP Office reporting and certifying the total percentage integrated delivered beam in Hall A, B, C at CEBAF achieved for the year. The values from each Hall are then averaged for the end of year result.

Documentation resides in the Office of Nuclear Physics (SC-26) files.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Nuclear Physics
Website: http://www.science.energy.gov/np

Performance Goal: *Heavy-Ion Collision Events*
Achieve at least 80% of the projected integrated heavy-ion collision luminosity for each of the PHENIX and STAR experiments at the Relativistic Heavy Ion Collider, where the projected values take into account anticipated collider performance and detector data-taking efficiencies

Results:

FY	Target	Commentary
2011	Met	Annual goal met. The cumulative projected integrated heavy-ion collision luminosity achieved by STAR was 142% and 123% for PHENIX.
2010	Met	Annual goal met. Cumulative percentage of delivered beam considered effective: STAR 229% and PHENIX 199%.
2008	Met	PHENIX sampled 159,000 million heavy-ion collision events and STAR recorded 67.2 million events.
2007	Met	Annual Target met. Sampled 5,100 million events in PHENIX and STAR recorded 86.6 million events. Achieving this target allows scientists to study heavy-ion collision events that create new forms of hot, dense nuclear matter and to probe their properties.

Documentation: The percentage of projected integrated heavy-ion collision luminosity considered effective by PHENIX and STAR is determined by the collection of data meeting the experimenter's requirements. Records of the fractional amount of beam that satisfies the experimenters' requirements are documented along with the criteria used and how the beam is monitored and kept at the laboratory.

Achieving 100% of integrated delivered beam that was used effectively means that 100% of the annual beam allocated to the experiments satisfied the experimenters' criteria for producing useful data.

Quarterly: Email from BNL management to NP program office reporting the cumulative percent fractional projected integrated heavy-ion collision luminosity sampled by each PHENIX and STAR experiments at RHIC for that quarter.

EOY: Official letter from BNL management to NP Office reporting and certifying the total percentage of projected integrated heavy-ion collision luminosity sampled by each PHENIX and STAR experiments at RHIC for the year.

Documentation resides in the Office of Nuclear Physics (SC-26) files.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Nuclear Physics
Website: http://www.science.energy.gov/np

Performance Goal: *NP Const/MIE Cost & Schedule*
Achieve within 10% for both the cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment rocurement projects

Results:

FY	Target	Commentary
2011	Met	Annual goal met: CPI = 0.97, SPI = 0.96
2010	Met	Annual goal met: CPI = 0.95, SPI = 0.98
2009	Met	Annual goal met: CPI = 0.98, SPI = 0.95
2008	Met	The 12 GeV project is within 10% of the cost and schedule variance. Achieved a value of 1.02% schedule variance and 0.98% cost variance based on the August 2008 monthly report.

Documentation: Derived from the Monthly Report preceding the end of the quarter for the following projects: 12 GeV CEBAF Upgrade
Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project.
Supporting documentation resides in the files of the ONP (SC-26).

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Nuclear Physics
Website: http://www.science.energy.gov/np

Performance Goal: *NP Facility Ops*
Achieve at least 80% average operation time of the scientific user facilities as a percentage of the total scheduled annual operating time

Results:

FY	Target	Commentary
2011	Met	Annual goal met. NP user facilities achieved 86.4% of scheduled operating time.
2010	Met	Annual goal met. NP facilities operated at 88.1% for the year.
2009	Met	Annual goal met.
2008	Met	NP user facilities (ATLAS, HRIBF, RHIC and CEBAF) achieved 88% reliability of the uptime/scheduled time.
2007	Met	Annual Target met. NP user facilities (ATLAS, HRIBF, RHIC and CEBAF) achieved an average of 91% reliability of the uptime/scheduled time for the year Achieving this target, scientists can optimally use the facilty's capability and optimize operation time studying nuclear physics.

Documentation: Quarterly: Emails from ANL (ATLAS), BNL (RHIC), ORNL (HRIBF), and TJNAF (CEBAF) management to NP Office with statistics regarding breakout of beam hours (per documented control process); NP program office worksheet showing calculations and compiled average. The total estimated operating hours for ATLAS, RHIC, HRIBF and CEBAF is 18,400 hours (80% is 14,720 hours). The achieved operation time of a facility as a percentage of the total scheduled annual operating time is calculated as follows: Operation Time = (Actual Operating Hours) divided by (Actual Operating Hours Actual unscheduled downtime) where (Actual Operating Hours) = (Hours for Research Hours for Beam Studies Hours for Tuning/Setup).

EOY: Official letters from ANL (ATLAS), BNL (RHIC), ORNL (HRIBF), and TJNAF (CEBAF) management to NP Office reporting and certifying annual achieved operation time of the user facility (per documented control process); NP program office worksheet showing subsequent calculation and compiled average of the achieved operation time as a percent of total scheduled annual operating time.

Documentation resides in the Office of Nuclear Physics (SC-26) files. This target, a measure of the reliability of NP facilities, is met when the average of the calculated percentages is greater than 80%.

Strategic Goal: 2: The Science and Engineering Enterprise
Office: Science
Program: Nuclear Physics
Website: http://www.science.energy.gov/np

Performance Goal: *Proton Collision Events*
Achieve at least 80% of the projected integrated proton-proton collision luminosity for each of the PHENIX and STAR experiments at the Relativistic Heavy Ion Collider, where the projected values take into account anticipated collider performance and detector data-taking efficiencies

Results:

FY	Target	Commentary
2011	Not Met	Annual goal not met. Proton running completed for this FY with the cumulative percentage of projected integrated proton-proton collision luminosity for STAR at 38% and 45% for PHENIX, missing the EOY goal due to equipment failures.
2010	Met	Annual goal met. Cumulative percentage of delivered beam considered effective: STAR 229% and PHENIX 199%.
2009	Not Met	Annual goal not met. PHENIX exceeded its annual goal with 90% but STAR did not with a result of 65.4%. The STAR experiment's projected enhancement in the accelerator's proton beam luminosity for STAR was not realized. Reference: Email from Steve Vigdor submitted to NP (SC-26).

Documentation: The percentage of projected integrated proton-proton collision luminosity considered effective by PHENIX and STAR is determined by the collection of data meeting the experimenter's requirements. Records of the fractional amount of beam that satisfies the experimenters' requirements are documented along with the criteria used and how the beam is monitored and kept at the laboratory.

Achieving 100% of integrated delivered beam that was used effectively means that 100% of the annual beam allocated to the experiments satisfied the experimenters' criteria for producing useful data.

Quarterly: Email from BNL management to NP program office reporting the cumulative percent fractional projected integrated proton-proton collision luminosity sampled by each PHENIX and STAR experiments at RHIC for that quarter.

EOY: Official letter from BNL management to NP Office reporting and certifying the total percentage of projected integrated proton-proton collision luminosity sampled by each PHENIX and STAR experiments at RHIC for the year.

Documentation resides in the Office of Nuclear Physics (SC-26) files.

Strategic Goal: 3: Securing our Nation
Office: National Nuclear Security Administration (NNSA)/Weapons Activities
Program: Directed Stockpile Work
Website: http://nnsa.energy.gov/defense_programs/the_stockpile.htm

Performance Goal: *LEP Production Costs*
Post Budget Target: Cumulative percent reduction in projected W76 warhead production costs per warhead from established validated baseline, as computed and reported annually by the W76 LEP Cost Control Board (Efficiency Measure)
FY 2011 target: 1%

Results:

FY	Target	Commentary
2011	Not Met	Did not achieve the cumulative annual target of 1.0% reduction of projected W76-1 warhead production cost per warhead from the established baseline (actual 0.70 %), based on the current recovery schedule. The cost savings realized for the first quarter were consumed by ongoing resolution of technical issues associated with the W76-1 production. For the MC4713 Launch Accelerometer, the cost savings were expended on additional technical support, additional process analyses, acceleration of test equipment availability, and tooling procurements to provide necessary mitigation for process variations (that will occur during long term manufacturing as in the W76-1 schedule) in order to continue fully supporting ramp-up to full scale production and final steady state production. For the MC4682 Dual Capacitor, prior cost savings are being expended on necessary design changes and requalification of the current vendor required to re-establish the manufacturing line for the capacitors. The August 2011 delivery was missed and the next assembly requirements are not being supported. In order to prevent a production gap, formal direction was provided to reduce the current production rate to a level that allows for delivery of new capacitors in the second quarter of FY2012. Prior cost savings are also being expended on the qualification of a new vendor due to the issues with the current vendor. In addition, cost savings are being expended on specific manufacturing processes that are being transferred to SNL due to vendor issues until the qualification of the new vendor is completed in December 2012. This result is important because the NNSA must demonstrate the ability to achieve cost-effective Life Extension Programs within Defense Programs. This target is behind schedule because of unanticipated cost increases in FY 2007, FY 2008, FY 2009, FY 2010, and FY 2011 (resulting from: (1) materials and component technical issues and resulting design changes, (2) vendor issues, and (3) increasing M&O healthcare and compensation costs that have been passed onto the LEP by the M&O contractors). Because the target was missed in the past five years, cost increases may possibly be offset by future efficiencies elsewhere in the W76-1 full production program (2012-2018).
2010	Not Met	Largely achieved the cumulative target of 1.0% reduction of projected W76 warhead production cost per warhead from the established baseline, based on current recovery schedule. The result for FY 2010 is a .8% reduction of projected warhead cost per warhead. This result is important because the NNSA must demonstrate the ability to achieve cost-effective Life Extension Programs within Defense Programs. This target is behind schedule because of unanticipated cost increases in FY 2007, FY 2008, FY 2009, and FY 2010 (resulting from (1) materials and component technical issues and the resulting design changes and (2) increasing M&O healthcare and compensation costs) that have been passed on to the LEP by the M&O contractors. Because the target was missed in the past three years, cost increases will have to be offset by future efficiencies elsewhere in the W76-1 full production program (2011-2023).
2009	Not Met	Did not achieve the cumulative target of 1.0% reduction of projected W76 production cost per warhead from the established baseline. Based on current recovery schedule, achieved a .8% reduction of production cost per warhead. This result is important because the NNSA must demonstrate the ability to achieve cost-effective Life Extension Programs within Defense Programs.
2008	Not Met	Did not achieve the cumulative target of 1% (decrease of 0.5%) reduction of projected W76 warhead production costs

		per warhead from established validated baseline, but the program is on a recovery schedule; increase to a cumulative of 0.78% for FY 2008. This result is important because the NNSA must demonstrate an increasingly cost-effective life extension program within the nuclear weapons program. The annual target was missed because projected/realized cost increases in FY 2007 and FY 2008 resulted from the Canned Sub-Assembly special material technical issue, Arming, Fusing and Firing (AF&F) System issue, Electrostatic Discharge (ESD) issue at Pantex, and increasing health care and compensation costs passed on to the LEP from the M&O contractors. Although this target was missed, the majority of the cost increases will be offset by efficiencies elsewhere in the program.
2007	Not Met	This result is important because NNSA must demonstrate an increasingly cost-effective life extension program within the nuclear weapons program. The cumulative target of .5% was missed (FY 2007 result was .39%) because current and projected cost increases in FY 2007 & FY 2008 result from a special material technical issue; this cost increase may be offset by efficiencies elsewhere in the program, but the efficiencies have not been demonstrated at this time. Because this cumulative target was missed, production costs will be higher, unless mitigated.
Documentation: 1) W76-1 LEP NNSA Project Plan (as revised) – provides a summary of the activities and schedules necessary to accomplish the W76-1/Mk4A refurbishment); 2) Planning and Production Directive (P&PD)current FY revision);3) W76-01 Program Control document dated 07-06-11; 5) Requirements and Planning Directive (RPD) current revision; 4) Selected Acquisition Report(s) (SAR) for W76-1; and, 5) Life Extension Program Management Plan dated 01-24-03.		

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Directed Stockpile Work
Website: http://nnsa.energy.gov/defense_programs/the_stockpile.htm

Performance Goal: *Stockpile Maintenance*
Post Budget Target: Annual percentage of items supporting Enduring Stockpile Maintenance completed (Annual percentage of prior-year non-completed items completed) (Annual Output)
FY 2011 target: 95% (100%)

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target by completing at least 95% (100% of prior year) of scheduled stockpile maintenance as reported by B&W Pantex from their Integrated Reporting Information System (IRIS). Six (6) Repair Exams were scheduled for completion by the end of the 4th Qtr with a total of eleven (11) completed. This result is important because it keeps active nuclear weapons fully operational, if needed by the President.
2010	Exceeded	Exceeded the annual target by completing 100% (100% of prior year) of scheduled stockpile maintenance as reported by B&W Pantex from their Integrated Reporting Information System (IRIS). Five repair exams were scheduled and five were completed. Four weapon rebuilds were scheduled and four were completed. Weapon program maintenance repair specifics are classified. Directives for the majority of weapons work are the individual weapon Program Control Documents (PCDs). Pantex's Daily Change Report (DCR) is how the actual completions (by Line Order Number (LON) are reported to the Weapon Information System (WIS). The Integrated Programmatic Scheduling System (IPSS) tracks these actual deliverables (by LON by weapon system); thus providing End-Of-Year status. The Directive for Limited Life Component (LLC) maintenance is the LLC PCD. All LONs, including change requests from the DoD, in support of weapon expiration (WIS/Master Nuclear Schedule (MNS)) and/or DoD maintenance schedules (MNS) were met (100% completed). This result is important because it keeps active nuclear weapons fully operational, if needed by the President.
2009	Met	Achieved the annual target of completing 95% (100% of prior year) of scheduled stockpile maintenance. This result is important because it keeps active nuclear weapons fully operational, if needed by the President.
2008	Met	Achieved the annual target of completing scheduled stockpile maintenance annual target of 95% (100% of prior year). This result is important because it keeps active nuclear weapons fully operational, if needed by the President.
2007	Met	This result is important because it keeps active nuclear weapons fully operational, if needed by the President. The annual target was 95% (100%) (FY 2007 result was 95% (100%).

Documentation: 1) End-of-Year Reconciliation Report; 2) Limited Life Component Exchange (LLCE) reports including DoD shipping schedules/ database; 3) Weapon Program Control Document(s); 4) Quarterly Surveillance tracking through the Quality Evaluation Requirements Tracking System (QERTS); 5) Pantex Plant weekly performance reporting and Daily Change Report(s) (DCRs).

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Directed Stockpile Work
Website: http://nnsa.energy.gov/defense_programs/the_stockpile.htm

Performance Goal: *W76-1 Life Extension Program (LEP)*
Post Budget Target: Cumulative percentage of progress in completing Nuclear Weapons Council (NWC)-approved W76-1 Life Extension Program (LEP) activity (Long-term Output)
FY 2011 target: 65%

Results:

FY	Target	Commentary
2011	Met	Achieved 100% of the cumulative annual target of 65% in accordance with the new W76-1 baseline schedule. The previous target for FY 2011 was 56%. The target has been changed and the production program re-baselined as a result of the implementation of the Nuclear Posture Review and in accordance with the current planning in the DoD/ DOE Nuclear Weapons Council Requirements and Planning Document (RPD). The new baseline (supporting the Nuclear Posture Review, based on the NWC decision to extend the production of the W76-1 Life Extension Program and the 2011 RPD) is formally released through the NWSM, NWSP (and the 2011 RPD) and is incorporated into the W76-01 PCD (2011-A dated 07/06/11). The W76-1 Life Extension Program continues to maintain or exceed the baseline production rates established in FY2009 despite the technical issues encountered prior to full-scale production. This result is important because extending the life of the W76-1, a weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs.
2010	Not Met	Missed target to achieve the cumulative annual target of 52%. Target achieved was 49%. The program did not meet its FY 2010 performance target for the W76-1 Life Extension Program due to technical issues encountered prior to full-scale production. However, the program has maintained the schedule baselined approximately one year ago and has completed units (16%) above that schedule in FY2010. This result is important because extending the life of the W76-1, a weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs.
2009	Met	Achieved the cumulative annual target of 48% (schedule increase of 4% over prior year) in accordance with the current W76-1 baseline schedule. This result is important because extending the life of the W76-1, a weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs.
2008	Met	Achieved the cumulative annual target of 44% (schedule increase of 5%) in accordance with the current W76-1 baseline schedule; projected increase of 5.2% over last year's actual to cumulative 44%. Previous technical problems (affecting schedule) associated with production of the special material for the Canned Sub-Assembly have been resolved. This result is important because extending the life of the W76-1, a weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs.
2007	Not Met	This result is important because extending the life of the W76-1, the weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs. The cumulative target of 39% was missed (FY 2007 result was 37.9%) mainly because of a schedule shortfall, associated with Canned Sub-Assembly (CSA) special material production problems at Y-12. Because this target was missed, the NWC milestone for the First Production Unit (FPU) by September 2007 was not met.

Documentation: 1) Identification of milestones (derived from the Integrated Master Schedule and Full Scale Engineering Development Schedule. These documents are defined in the W76-1 LEP NNSA Project Plan); 2) W76-1 LEP NNSA Project Plan (as revised) – provides a summary of the activities and schedules necessary to accomplish the W76-1/Mk4A refurbishment); 3) Planning and Production Directive (P&PD) current FY revision); 4) W76-01 Program Control Document dated 07-06-11; 5) Requirements and Planning Directive (RPD) current revision; 6) Selected Acquisition Report(s) (SAR) for W76-1;and 7) Life Extension Program Management Plan dated 01-24-03 .

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Directed Stockpile Work
Website: http://nnsa.energy.gov/defense_programs/the_stockpile.htm

Performance Goal: Annual Warheads Certification
Annual percentage of warheads in the Stockpile that are safe, secure, reliable, and available to the President for deployment (Annual Outcome)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Achieved 100% of the annual target (100%) whereby the nuclear warheads in the active stockpile were assessed through the Annual Assessment process as being safe, secure, reliable (effective) and available to the President for deployment. This result is important because it ensures the overall availability of the nuclear weapons stockpile for the nation's nuclear deterrent.
2010	Met	Achieved the annual target (100%) whereby the nuclear warheads in the active stockpile are assessed thru the Annual Assessment process as being safe, secure, reliable and available to the President for deployment. NA-10 signed out and sent the Cycle 15 Annual Assessment Memorandum to the National Laboratory Directors on January 12, 2010. This included the Annual Stockpile Assessment - Cycle 15 Execution Plan. In accordance with the milestone schedule therein, all deliverables were completed. This result is important because it ensures the overall availability of the nuclear weapons stockpile for the nation's nuclear deterrent.
2009	Met	Achieved 100 percent of the annual target whereby 100% of weapons in the stockpile are safe, secure, reliable and available to the President for deployment. This result is important because it ensures the overall availability of the nuclear weapons stockpile for the nation's nuclear deterrent.
2008	Met	Achieved the annual target of 100% of weapons as safe, secure, reliable, and available. This result is important because it ensures the overall availability of the nuclear weapons stockpile for the nation's nuclear deterrent.
2007	Met	This result is important because it ensures the overall availability of the nuclear weapons stockpile for the national nuclear deterrent. The annual target was 100% (FY 2007 result was 100%).

Documentation: Annual Assessment Report: Laboratory-published Warhead Annual Assessment Reports, Annual Laboratory Director Annual Assessment Letters, Report on Stockpile Assessment, 1) NNSA National Laboratories published Warhead Annual Assessment Reports/ Weapon Reliability Reports; 2) Laboratory Director Annual Assessment Letters; 3) Annual Assessment Letter (CINCSTRAT); 4) Annual Assessment Memorandum to the President (SecDef-SecEng); 5) End-of-Year Reconciliation Report; 6) Weapon Yield Certification Letter; 7) Significant Finding Investigation Reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Science Campaign
Website: http://nnsa.energy.gov/defense_programs/science.htm

Performance Goal: *First Principles Physics Models*
Post Budget Target: Cumulative percentage of progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment (Long-term Outcome)
FY 2011 target: 63%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 63% progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment. This was a year that saw major achievements in energy balance, resumption of Plutonium experiments on Z and on JASPER, gas equation of state experiments on Z, new results determined on Bacchus and Barolo at U1a and high energy weapon physics experiments on NIF. These results are important because they maintain capability needed to assess and certify our nuclear weapons in the absence of underground testing.
2010	Not Met	Did not achieve maintaining the cumulative target of 60% progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assess by validation with experiment. The FY 2010 result was 58%. This result is important because it will improve nuclear weapon certification confidence. This goal was missed because of delays on Jasper, Borolo, and Bacchus. As a result of this goal being missed additional costs are being incurred and further delays to both these and many smaller scale experiments result. The overall state of our knowledge of nuclear weapon materials, and plutonium in particular is now more than 2 years behind where it should be.
2009	Met	Achieved the cumulative target of 50% progress in replacing Key empirical parameters in the nuclear explosive package assessment with first principles physics models assess by validation with experiment. This result is important because it will improve nuclear weapon certification confidence. Future Plans: For FY 2010, the target will increase to 60%.

Documentation:
- Predictive Capability Framework
- Milestone Reporting Tool
- White Paper on Quantification of Margins and Uncertainty Performance Measure

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Science Campaign
Website: http://nnsa.energy.gov/defense_programs/science.htm

Performance Goal: *Key Extreme Experimental Conditions*
Post Budget Target: Cumulative percentage of progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance (Long-term Outcome)
FY 2011 target: 55%

Results:

FY	Target	Commentary
2011	Met	Met the annual target of 55% progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance. The most significant results are the high energy weapons physics experiments at the NIF. High radiation temperature and high pressures have been achieved at NIF. The shots have supported the Dynamic Materials Properties and Secondary Assessment Technologies subprograms. The shots also support the Level-2 milestone associated with the Pleiades experiment. At Z there was restoration of Plutonium capability with first shot in November. At Omega, the highest yield DT cryogenic implosion was achieved, with an area density of 200 mg/cm2. This result is important because it maintains capability needed to assess and certify our nuclear weapons in the absence of underground testing.
2010	Met	Achieved the cumulative target of 35% progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance. This result is important because it will improve nuclear weapon certification confidence.
2009	Met	Achieved the cumulative target of 25% progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance. This result is important because it will improve nuclear weapon certification confidence.

Documentation:
- Predictive Capability Framework
- Milestone Reporting Tool
- White Paper on Extreme Conditions Performance Measure

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Science Campaign
Website: http://nnsa.energy.gov/defense_programs/science.htm

Performance Goal: *Stockpile Stewardship Science*
Annual investment, as measured by total Science Campaign budget, per refereed journal publication or final formal internal report (Efficiency)
FY 2011 target: $940,000

Results:

FY	Target	Commentary
2011	Met	Achieved an annual average cost of $940,000 per refereed journal publication or final formal internal report. The sites, at the rate of once or twice a year, provide a summary of their internal and external publications. They have recently updated their progress. A History of Boost, a classified publication, is a good example of addressing one of the key physics areas in weapon physics. This result is important because it demonstrates program efficiencies for scientific progress.
2010	Met	Achieved the annual target of annual average cost of $970,000 per refereed journal publication or final formal internal report. This result is important because it demonstrates program efficiencies for scientific progress. For FY 2011, the target will decrease to $940,000.

Documentation: Reports for the measure are provided by LLNL at the end of each Quarter; Data submitted is verified with LLNL POC by program staff; Log books supporting each test are available at LLNL for review by program manager/staff; NA-10 Milestone Reporting Tool status reports.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Engineering Campaign
Website: hppt://nnsa.energy.gov/defense_programs/engineering

Performance Goal: *Enhanced Surety*
Cumulative percentage of progress towards an improved initiation system to meet detonation safety requirements for future alterations or modifications to stockpiled weapons, measured by the number of milestones, in the implementation plan, completed (Long-term Output)
FY 2011 target: 47%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 47% completion. All four of the Enhanced Surety Subprogram milestones have been completed for FY 2011. This result is important because new components and materials will enable future systems and stockpiled weapons, subjected to alterations or modifications, to better satisfy surety requirements outlined in departmental directives, and provide for a safer and more secure stockpile.
2010	Met	Achieved cumulative target of 41%. This result is important because new components and materials will enable future systems and stockpiled weapons, subjected to alterations or modifications, to better satisfy surety requirements outlined in departmental directives, and provide for a safer and more secure stockpile.
2009	Met	Achieved the cumulative target of 35%. This result is important because new components and materials will enable future systems and stockpiled weapons, subjected to alterations or modifications, to better satisfy surety requirements outlined in departmental directives, and provide for a safer and more secure stockpile.
2008	Met	Achieved the cumulative target of 75% by completing all active supporting milestones on or ahead of schedule. This result is important because new components and materials will enable future systems to better satisfy surety requirements outlined in departmental directives, and provide for a safer and more secure stockpile.
2007	Met	This result is important because new components and materials will enable future systems to better satisfy surety requirements outlined in departmental directives, and provide for a safer and more secure stockpile. The cumulative target was 70% (FY 2007 result was 70%).

Documentation: Supporting schedule and milestones in approved program plans:
- Program reports of specific accomplishment
- Program-specific quarterly review briefings
- Weighted statistical tool used to calculate overall milestone scope accomplishment
- NA-10 MRT status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Engineering Campaign
Website: http://nnsa.energy.gov/defense_programs/engineering

Performance Goal: *Enhanced Surveillance*
Cumulative percentage of progress towards completion of aging models and assessments, diagnostics, and tools needed for science-based lifetime predictions of specific weapon components and for transformation to more predictive, stockpile surveillance, measured by the number of milestones, in the implementation plans completed (Long-term Output)
FY 2011 target: 62%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 62%. All eleven of the Enhanced Surveillance Subprogram milestones have been completed and are blue for year-end FY 2011. This result is important because this year's work enables earlier identification of stockpile aging concerns, reduces the uncertainties in the assessment of stockpile health, assists in decisions for stockpile refurbishment, and provides tools for transitioning to more predictive means to assess the stockpile.
2010	Met	Achieved cumulative target of 57%. All seven of the Enhanced Surveillance Subprogram milestones were completed by the end of FY10. This result is important because this year's work enables earlier identification of stockpile aging concerns, reduces the uncertainties in the assessment of stockpile health, assists in decisions for stockpile refurbishment, and provides tools for transforming to more predictive means to assess the stockpile.
2009	Met	Achieved the cumulative target of 53%. This result is important because this year's work enables earlier identification of stockpile aging concerns, reduces the uncertainties in the assessment of stockpile health, assists in decisions for stockpile refurbishment, and provides tools for transforming to more predictive means to assess the stockpile. Supporting Documentation: Current. Future Plans: For FY 2010, the target will increase to 57%. The annual target will build on prior years' results, increasing 6% to achieve 59% of the annual performance target in FY 2010, as planned. This may be adjusted dependent upon the finalized FY 2010 Budget.
2008	Met	Achieved the cumulative target of 47% by successfully completing the necessary amount of work scope on FY 2008 and out year milestones. This result is important because this year's work enabled earlier identification of stockpile aging concerns, reduces the uncertainties in the assessment of stockpile health, assists in decisions for stockpile refurbishment, and provides tools for transforming to more predictive means to assess the stockpile.
2007	Met	This result is important because this year's work enables earlier identification of stockpile aging concerns, reduces the uncertainties in the assessment of stockpile health, assists in decisions for stockpile refurbishment, and provides tools for transforming to more predictive means to assess the stockpile. The cumulative target was 40% (FY 2007 result was 40%).

Documentation: Supporting schedule and milestones in approved program plans
- Program reports of specific accomplishment
- Program-specific quarterly review briefings
- Weighted statistical tool used to calculate overall milestone scope accomplishment
- NA-10 MRT status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Engineering Campaign
Website: http://nnsa.energy.gov/defense_programs/engineering

Performance Goal: *Ion Beam Laboratory*
Cumulative percentage of the Ion Beam Laboratory (IBL) project completed (total project cost), while maintaining a Cost Performance Index (CPI) of 0.9-1.5 (Efficiency)
FY 2011 target: 95%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 95% by completing project 6 months ahead of the March 2012 scheduled baseline and ended $5M below the budgeted amount of $37M. The IBL Facility and the IBL Equipment are now operational and performing in compliance with project specification. The CD-4 package was approved Sept 2011. This result is important because a key facility will be provided to support major campaign efforts.
2010	Exceeded	Exceeded the cumulative target of 62% by completing 78.4% by year-end. The project is on track and has maintained a cumulative CPI of 1.09. Despite a Baseline Change Approval to increase the scope, the project is ahead of schedule and is within cost. This result is important because a key facility will be provided to support major campaign efforts.
2009	Exceeded	Exceeded the cumulative target of 38.3%. This result is important because a key facility will be provided to support major campaign efforts.

Documentation: IBL Monthly Report; DOE Project Assessment and Reporting System (PARS II) reports providing official project status to the DOE Deputy Secretary and NNSA Administrator

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Engineering Campaign
Website: http://nnsa.energy.gov/defense_programs/engineering

Performance Goal: *Nuclear Survivability*
Cumulative percentage of completion of design and qualification tools for meeting requirements for survivability in intense radiation environments needed for future alterations or modifications to replace the existing proof-testing approach that uses significant amounts of highly enriched uranium, measured by the number of milestones in the implementation plan, completed (Long-term Output)
FY 2011 target: 70%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 70%. All three of the Nuclear Survivability Subprogram milestones have been completed for FY 2011. This result is important because the development of the tools is needed to assess whether certain non-nuclear components of weapons in the future stockpile will meet nuclear survivability requirements. This assessment must be performed in life extension programs and in new insertion opportunities, including weapon alterations and modifications.
2010	Met	Achieved cumulative target of 65%. Three of the four subprogram milestones were completed on time; the fourth milestone was completed soon after the end of FY2010, with no impact to FY11 work scope. This result is important because the development of the tools is needed to assess whether the non-nuclear components of weapons in the future stockpile will meet nuclear survivability requirements.
2009	Met	Achieved the cumulative target by completing 56% of design and qualification tools for meeting requirements for survivability in intense radiation environments needed for future alterations or modifications to replace the existing proof-testing approach. This result is important because the development of the tools is needed to assess whether the non-nuclear components of weapons in the future stockpile will meet nuclear survivability requirements.
2008	Met	Achieved the cumulative target of 48% by successfully completing all supporting milestones on or ahead of schedule. This result is important because the improved tools for the survivability of weapons in the future stockpile will meet nuclear survivability requirements for non-nuclear components in life extension programs and new insertion opportunities including weapon alterations and modifications; and these tools will aid in the development, validation, improvement, and sustainment of experimental and theoretical capabilities resulting in the development of radiation-hardening technologies to support the certification and effectiveness of the evolving and aging stockpile.
2007	Met	This result is important because the improved tools for the survivability of weapons in the future stockpile will meet nuclear survivability requirements for non-nuclear components in life extension programs and new insertion opportunities including weapon alterations and modifications. These tools will aid in the development, validation, improvement, and sustainment of experimental and theoretical capabilities resulting in the development of radiation-hardening technologies to support the certification and effectiveness of the evolving and aging stockpile. The cumulative target was 40% (FY 2007 result was 40%).

Documentation: Supporting schedule and milestones in approved program plans:
- Program reports of specific accomplishment
- Program-specific quarterly review briefings
- Weighted statistical tool used to calculate overall milestone scope accomplishment
- NA-10 MRT status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Engineering Campaign
Website: http://nnsa.energy.gov/defense_programs/engineering

Performance Goal: *Weapon Systems Engineering Assessment Technology*
Cumulative percentage of progress towards system engineering methodology for assessing and predicting the effects of large thermal, mechanical, and combined forces on nuclear weapons for future alterations or modifications, measured by the number of experimental data sets, in the implementation plan, completed (Long-term Output)
FY 2011 target: 60%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 60%. All three of the Weapon Systems Engineering Assessment Technology Subprogram milestones have been completed and are blue for year-end FY 2011. This result is important because these data sets will help develop the tools and technologies to validate structural and thermal models used by the Engineering Campaign to support the stockpile and will help the development of improved qualification tools and methodologies for the future stockpile.
2010	Met	Achieved cumulative target of 61%. Three of the four subprogram milestones were completed on time; the fourth milestone was completed soon after the end of FY2010, with no impact to FY11 work scope. The amount of work scope left incomplete at the end of FY10 is less than 0.5% of the target. This result is important because these data sets will help develop the tools and technologies to validate structural and thermal models used by the Engineering Campaign to support the stockpile and will help the development of improved qualification tools and methodologies for the future stockpile.
2009	Met	Achieved the cumulative target of 54% of progress towards system engineering methodology for assessing and predicting the effects of large thermal, mechanical, and combined forces on nuclear weapons for future alterations or modification. This result is important because these data sets will help develop the tools and technologies to validate structural and thermal models used by the Engineering Campaign to support the stockpile and will help the development of improved qualification tools and methodologies for the future stockpile.
2008	Met	Achieved the cumulative target of 53% by successfully completing all milestones on or ahead of schedule. This result is important because these data sets will help develop the tools and technologies to validate structural and thermal models used by the Engineering Campaign to support the stockpile and will help the development of improved qualification tools and methodologies for the future stockpile.
2007	Met	This result is important because these data sets will help develop the tools and technologies to validate structural and thermal models used by the Engineering Campaign to support the stockpile and will help the development of improved qualification tools and methodologies for the future stockpile. The cumulative target was 45% (FY 2007 result was 45%).

Documentation: Supporting schedule and milestones in approved program plans; Program reports of specific accomplishment; Program-specific quarterly review briefings; Weighted statistical tool used to calculate overall milestone scope accomplishment; NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Inertial Confinement Fusion Ignition and High Yield Campaign
Website: http://www.nnsa.doe.gov/defense.htm#1

Performance Goal: *Cost Reduction*
Cumulative percentage of operating cost reduction from 2009, adjusted for inflation, utility costs, and laboratory indirect costs, all ICF facilities combined (Efficiency)
FY 2011 target: 1%

Results:

FY	Target	Commentary
2011	Data Not Available	Missing the status because data is not available and due to challenges in collecting uniform and comparable cost/savings data among the operating sites. This was not measured due to the very different ways used by the operating sites to assign costs and savings.
2010	Data Not Available	Due to the very different ways used by the operating sites to assign costs and savings, it has been found impossible to establish a uniform system of evaluating the savings.

Documentation: None available.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Inertial Confinement Fusion Ignition and High Yield Campaign
Website: http://www.nnsa.doe.gov/defense.htm#1

Performance Goal: *High Particle and Radiation Environment*
Annual percentage of shots/experimental implosions in which the facility and diagnostics meet the minimum requirements for obtaining data in high particle and radiation environments (Annual Output)
FY 2011 target: 40%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 40%. Shots related to this measure are being conducted on the NIF, and Omega and Z shots continue to be on track. This result is important because it demonstrates the ability of the facility to meet the requirements and to enhance the confidence in the data obtained.
2010	Met	Achieved the cumulative target of 30%. This measure is important because it demonstrates ability of the facility to meet the requirements and to enhance the confidence in the data obtained.

Documentation: Program schedule and supporting milestones are in program plans; E-mail reports from site facilities supported by experimental logs; NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Inertial Confinement Fusion Ignition and High Yield Campaign
Website: http://www.nnsa.doe.gov/defense.htm#1

Performance Goal: *Key Extreme Experiments*
Cumulative percentage of progress towards achievement of key extreme experimental condition of matter needed for predictive capability for nuclear weapons performance (Long-term Outcome)
FY 2011 target: 55%

Results:

FY	Target	Commentary
2011	Met	Met the annual target of 55% progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance. The most significant results are the high energy weapons physics experiments at the NIF. High radiation temperature and high pressures have been achieved at NIF. The shots have supported the Dynamic Materials Properties and Secondary Assessment Technologies subprograms. The shots also support the Level-2 milestone associated with the Pleiades experiment. At Z there was restoration of Plutonium capability with first shot in November. At Omega, the highest yield DT cryogenic implosion was achieved, with an area density of 200 mg/cm2. This result is important because it maintains capability needed to assess and certify our nuclear weapons in the absence of underground testing.
2010	Met	Achieved the cumulative target of 35% progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance. This result is important because it will improve nuclear weapon certification confidence.

Documentation: Predictive Capability Framework; Milestone Reporting Tool

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Inertial Confinement Fusion Ignition and High Yield Campaign
Website: http://www.nnsa.doe.gov/defense.htm#1

Performance Goal: *Nuclear Explosive Package Assessment*
Cumulative percentage of progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment (Long-term Outcome)
FY 2011 target: 63%

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 63% progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment. This was a year that saw major achievements in energy balance, resumption of Plutonium experiments on Z and on JASPER, gas equation of state experiments on Z, new results determined on Bacchus and Barolo at U1a and high energy weapon physics experiments on NIF. These results are important because they maintain capability needed to assess and certify our nuclear weapons in the absence of underground testing.
2010	Not Met	Did not achieve maintaining the cumulative target of 60% progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assess by validation with experiment. The FY 2010 result was 58%. This result is important because it will improve nuclear weapon certification confidence. This goal was missed because of delays on Jasper, Borolo, and Bacchus. As a result of this goal being missed additional costs are being incurred and further delays to both these and many smaller scale experiments result. The overall state of our knowledge of nuclear weapon materials, and plutonium in particular is now more than 2 years behind where it should be.

Documentation: Predictive Capability Framework; Milestone Reporting Tool; White Paper on Quantification of Margins and Uncertainty Performance Measure

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Advanced Simulation and Computing Campaign
Website: http://nnsa.energy.gov/defense_programs/asc.htm

Performance Goal: *Adoption of ASC Modern Codes*
The cumulative percentage of simulation runs that utilize modern ASC-developed codes on ASC computing platforms, as measured against the total of legacy and ASC codes used for stockpile stewardship activities (Long-term Outcome)
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Exceeded	The non-code development use of the ASC modern codes and legacy codes for stockpile stewardship activities slightly exceeded expectations. The ASC program achieved a cumulative percentage of 97% (an increase of 7% over the target of 90%). The progress associated with this outcome performance indicator is based on lab program manager assessment of ASC modern code usage by designers and analysts, not discrete project activities. This calculation is the result of averaging the site reported data points. This result is important because it demonstrates the adoption of the modern codes for improved assessment and certification of the nuclear stockpile.
2010	Met	Achieved 100% of the annual target of the cumulative percentage of 85% (increase of 5%) of simulation runs that utilize modern ASC-developed codes. This result is important because it demonstrates the adoption of the modern codes for improved assessment and certification of the nuclear stockpile.
2009	Met	Achieved the cumulative percentage of 80% (increase of 8%) of simulation runs that utilize modern ASC-developed codes. This result is important because it demonstrates the adoption of the modern codes for improved assessment and certification of the nuclear stockpile.
2008	Met	Achieved the cumulative percentage of 72% (increase of 9%) of simulation runs that utilize modern ASC-developed codes This result is important because it demonstrates the adoption of the modern codes for improved assessment and certification of the nuclear stockpile.
2007	Met	--

Documentation: Periodic reports to HQ Program Manager from responsible site concerning specific deliverables and NA-10 Milestone Reporting Tool (MRT) status reports.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Advanced Simulation and Computing Campaign
Website: http://nnsa.energy.gov/defense_programs/asc.htm

Performance Goal: *ASC Impact on SFI Closure*
Investigations (SFIs) resolved through the use of modern (non-legacy) ASC codes, measured against all codes used for SFI resolution (Long-term Outcome)
FY 2011 target: 65%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded target of 65% by 7% to achieve a cumulative percentage for 72% of nuclear weapon SFIs resolved through the use of modern ASC codes. The activity associated with this outcome performance indicator is level-of-effort and in-line with expectations of work scope articulated in the draft FY 2011 implementation plan. The specific accomplishments are classified in nature and therefore are unavailable for this report. Contributions of ASC to the annual assessment, life extension programs including significant finding investigations can be briefed at the CFO's convenience. This result is important because it demonstrates the impact of the modern codes for improved assessment and certification of the nuclear weapons stockpile.
2010	Met	Achieved 100% of the annual target of the cumulative percentage for 60% (increase of 10%) of nuclear weapon SFIs resolved through the use of modern ASC codes. This result is important because it demonstrates the impact of the modern codes for improved assessment and certification of the nuclear weapons stockpile.
2009	Met	Achieved the cumulative percentage of 50% (increase of 13%) of nuclear weapon SFIs resolved through the use of modern ASC codes. This result is important because it demonstrates the impact of the modern codes for improved assessment and certification of the nuclear weapons stockpile. Supporting Documentation: Current.
2008	Met	Achieved the cumulative percentage of 37% (increase of 12%) of nuclear weapon SFIs resolved through the use of modern ASC codes. This result is important because it demonstrates the impact of the modern codes for improved assessment and certification of the nuclear weapons stockpile.
2007	Met	--

Documentation: Laboratory reports to HQ Program Manager and NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Advanced Simulation and Computing Campaign
Website: http://nnsa.energy.gov/defense_programs/asc.htm

Performance Goal: *Reduced Reliance on Calibration*
Cumulative percentage reduction in the use of calibration "knobs" to successfully simulate a nuclear weapons performance (Long-term Outcome)
FY 2011 target: 35%

Results:

FY	Target	Commentary
2011	Met	Achieved target for a cumulative 35% reduction in the use of calibration "knobs." The activity associated with this outcome performance indicator is based on the Predictive Capability Framework plans and in-line with expectations of work scope articulated in the draft FY 2011 implementation plan. This result is important because it continues the maturation of modern codes provided to users to support stockpile certification.
2010	Exceeded	Exceeded the annual target with a cumulative 33% reduction in the use of calibration "knobs." This result is important because it continues the maturation of modern codes provided to users to support stockpile certification.
2009	Met	Achieved the cumulative percentage of 25% (increase of 9%) of reduction in the use of calibration "knobs." This result is important because it continues the maturation of the modern codes provided to users to support stockpile certification. Supporting Documentation: Current.
2008	Met	Achieved the cumulative percentage of 16% (increase of 8%) of reduction in the use of calibration "knobs." This result is important because it continues the maturation of the modern codes provided to users to support stockpile certification.
2007	Met	--

Documentation: Laboratory Reports to HQ Program Manager and NA-10 Milestone Reporting Tool (MRT) status reports.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Readiness Campaign
Website: http://www.energy.gov/defense_programs/asc.htm

Performance Goal: *Critical Capabilities Deployed*
Cumulative number of critical immediate and urgent capabilities deployed to support our Directed Stockpile Work (DSW) customer's nuclear weapon refurbishment needs derived from the Production Readiness Assessment Plan (Long-term Output)
FY 2011 target: 27

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 27 (increase of 2 capabilities) by way of Advanced Inventory and Materials Management and Multi-Site Tester Architecture. To date, Advanced Inventory and Materials Management project was completed in March 2011 and the Multi-Site Tester Architecture was completed in September 2011. This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2010	Met	Met the cumulative target of 25 (increase of 1 capability by way of Deployment of Backfill / Crimp Station.) This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2009	Exceeded	Exceeded the cumulative target of 24. This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2008	Met	Achieved the annual target of a cumulative total of 22 critical capabilities at the end of FY 2008. This is an increase of 2. This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2007	Met	This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs. The cumulative target was 20 (FY 2007 result was 20).

Documentation: Milestones supporting the performance measure are documented in the Campaign's plans; Site acceptance reports or other appropriate documentation (if classified, cover pages submitted including applicable document record numbers and information on how to obtain a copy of the report); Weekly/monthly site status calls with the Federal Program Manager; Submittal of copies of Qualification Engineering Releases (QERs); Federal Program Manager/staff confirm completion during site visits and Program Reviews by observation of the capability in use; NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNAS/Weapons Activities
Program: Readiness Campaign
Website: http://www.energy.gov/defense_programs/asc.htm

Performance Goal: *Percentage of Investment*
Percentage of investment in the ADAPT, Stockpile Readiness, Nonnuclear Readiness, and High Explosive and Weapons Operations subprograms in development of Capabilities that forecast within three years of production deployment operational cost savings of at least two times the development and deployment cost compared to pre-deployment operations. (Long-term efficiency)
FY2011 target: 2.5%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the target of 2.5%. Readiness Campaign had an efficiency savings of approximately 3.5%. This result is important because it supports the transformation of the nuclear security enterprise into an agile and more responsive enterprise with lower production and operating costs.
2010	Met	Met the target of 2.5 %. This result is important because it supports the transformation of the nuclear security enterprise into an agile and more responsive enterprise with lower production and operating costs.
2009	Exceeded	Exceeded the target of 2.5%. This result is important because it supports the transformation of the nuclear weapons complex into an agile and more responsive enterprise with lower production and operating costs.

Documentation: Spreadsheet documenting ADAPT Savings, HEWO Savings, NNR Savings, and SR Savings

Strategic Goal: 3: Securing our Nation
Office: NNAS/Weapons Activities
Program: Readiness Campaign
Website: http://www.energy.gov/defense_programs/asc.htm

Performance Goal: *Reduce Cycle Times*
The number of capabilities deployed every other year to stockpile programs that will reduce cycle times at least by 35% (against baselined agility and efficiency) (Annual Outcome)
FY 2011 target: 1

Results:

FY	Target	Commentary
2011	Met	Achieved the target of deploying one capability (by way of CASTLE-WR) in FY11 that will reduce cycle times by at least 35 %. To date, standardizing the Universal Electrostatic Discharge positions the CASTE-WR completed its FY11 activities September 2011. This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2010	--	--
2009	Exceeded	Exceeded the target of deploying one capability in FY 2009 that will reduce cycle times at least by at least 35%. This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2008	Met	Achieved the annual target of milestones completed in working towards deploying one capability in FY 2009 that will reduce cycle times at least by at least 35%. This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs.
2007	Met	This result is important because it is required to support immediate and urgent nuclear weapon refurbishment needs. The annual target was 1 (FY 2007 result was 1).

Documentation:
-Milestones supporting the performance measure are documented in the Campaign's plans
-Site acceptance reports or other appropriate documentation (if classified, cover pages submitted including applicable document record numbers and information on how to obtain a copy of the report)
-Weekly/monthly site status calls with the Federal Program Manager
-Submittal of copies of Qualification Engineering Releases (QERs)
-Federal Program Manager/staff confirm completion during site visits and Program Reviews by observation of the capability in use
-NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Readiness Campaign
Website: http://www.energy.gov/defense_programs/asc.htm

Performance Goal: *Tritium Production*
Cumulative number of Tritium-Producing Burnable Absorber Rods (TPBARs) irradiated in Tennessee Valley Authority reactors to provide the capability of collecting new tritium to replace inventory for the nuclear weapons stockpile (Long-term Output)
FY 2011 target: 1,328

Results:

FY	Target	Commentary
2011	Met	Achieved the cumulative target of 1,328 TPBARs (increase of 240 TPBARs) irradiated by TVA. 240 TPBARs were removed from the reactor in March 2011, and 544 TPBARS were inserted. The 544 TPBARS that were inserted are projected to be removed from the reactor in October 2012. This result is important because irradiation of TPBARs is essential for the establishment of an assured domestic source of tritium to meet the continuing needs of the nuclear weapons stockpile.
2010	Exceeded	Exceeded the cumulative target of 960 TPBARs (increase of 240 TPBARs) irradiated in TVA reactors by completing the irradiation of 1,088 TPBARS. This result is important because irradiation of TPBARs is essential for the establishment of an assured domestic source of tritium to meet the continuing needs of the nuclear weapons stockpile.
2009	Exceeded	Exceeded the cumulative target of 960 TPBARs (increase of 240 TPBARs) irradiated in TVA reactors. This result is important because irradiation of Tritium Producing Burnable Absorber Rods is essential for the establishment of an assured domestic source of tritium to meet the continuing needs of the nuclear weapons stockpile.
2008	Met	Achieved the cumulative target of 720 TPBARs irradiated in FY 2008, an increase of 240 TPBARs. This result is important because irradiation of Tritium Producing Burnable Absorber Rods is essential for the establishment of an assured domestic source of tritium to meet the continuing needs of the nuclear weapons stockpile.
2007	Met	This result is important because irradiation of Tritium Producing Burnable Absorber Rods is essential for the establishment of an assured domestic source of tritium to meet the continuing needs of the nuclear weapons stockpile. The cumulative target was 480 (FY 2007 result was 480).

Documentation:
-Milestones supporting the performance measure are documented in the Campaign's plans
-Site acceptance reports or other appropriate documentation (if classified, cover pages submitted including applicable document record numbers and information on how to obtain a copy of the report)
-Weekly project status calls with the Federal Program Manager
-End of cycle reports submitted by the Tennessee Valley Authority (TVA)
-Quarterly Project Reviews (attended by TVA)
-NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNAS/Weapons Activities
Program: Readiness in Technical Base and Facilities
Website: http://www.energy.gov/defense_programs/facilities_operations.htm

Performance Goal: *Facility Condition Index (FCI) for Mission Critical Facilities*
Annual NNSA complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance costs per replacement plant value, for all mission-critical facilities and infrastructure (Annual Outcome)
FY 2011 target: 5%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 5% by reducing the aggregate Facility Condition Index (FCI) for all mission critical facilities and infrastructure to 3%. This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2010	Met	Achieved the annual target by reducing the aggregate Facility Condition Index (FCI) for all mission critical facilities and infrastructure to 5%. This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2009	Met	Exceeded the annual target by reducing the aggregate Facility Condition Index (FCI) for all mission critical facilities and infrastructure to 3.37%. This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2008	Exceeded	Exceeded the annual target by reducing the aggregate Facility Condition Index (FCI) for all mission critical facilities and infrastructure to 4.26% (target was 5%). This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2007	Met	This result is important because it demonstrates progress in improved facility conditions and increased operational effectiveness and efficiency. The annual target was 6.8% (FY 2007 result was 6.5%).

Documentation: Milestones supporting the performance measure are documented in the program and site RTBF plans; Ten-Year Planning Guidance and Ten-Year Site Plans; DOE Facility Information Management System (FIMS) database; NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Readiness in Technical Base and Facilities
Website: http://www.energy.gov/defense_programs/facilities_operations.htm

Performance Goal: *Facility Condition Index (FCI) for Mission Dependent Not Critical Facilities*
Annual NNSA complex-wide aggregate Facility Index (FCI), as measured by deferred maintenance per replacement plant value, for all mission-dependent, not critical facilities and infrastructure (Annual Outcome)
FY 2011 target: 8.45%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the target of 8.45% by reducing the aggregate Facility Condition Index (FCI) for all mission dependent, not critical facilities and infrastructure to ~8.12%. This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2010	Met	Achieved the annual target by reducing the aggregate Facility Condition Index (FCI) for all mission dependent, not critical facilities and infrastructure to 8.6%. This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2009	Met	Exceeded the annual target by reducing the aggregate Facility Condition Index (FCI) for all mission dependent, not critical facilities and infrastructure to 6.91%. This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.
2008	Met	Achieved 93% of the annual target by reducing the aggregate Facility Condition Index (FCI) for all mission dependent, not critical facilities and infrastructure to 8.92% (target was 8.25%). This result is important because it demonstrates progress in improved facilities conditions and increased operational effectiveness and efficiency.

Documentation: - Milestones supporting the performance measure are documented in the program and site plans
- Ten-Year Planning Guidance and Ten-Year Site Plans
- DOE Facility Information Management System (FIMS) database
- NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Readiness in Technical Base and Facilities
Website: http://www.energy.gov/defense_programs/facilities_operations.htm

Performance Goal: *Major Construction Projects*
Execute construction projects within approved costs and schedules, as measured by the total percentage of projects with total estimated cost (TEC) greater than $20 million with a schedule performance index (ratio of budgeted cost of work performed to budgeted cost of work scheduled) and a cost performance index (ratio of budgeted cost of work performed to actual cost of work performed) between 0.9-1.15 (Efficiency Measure)
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Met	Achieved 100% of the target by fiscal year end. One project, the Chemistry and Metallurgy Research Facility Replacement Radiological Laboratory Utility Office Building Equipment Installation sub-project, has a schedule performance index of 1.09. This means the project is ahead of schedule and likely to finish early. This result is important because it demonstrates effective program management over multiple projects and improved efficiencies.
2010	Met	Achieved the annual target of 90%. All ten projects (100%) met the criteria. Two of the eight projects exceeded the criteria (indices are greater than the specified band, meaning they are outperforming expectations). The Zone 12 High Pressure Fire Loop at Pantex has a cost performance index of 1.24, higher than the upper limit. The CMRR RLUOB Equipment Installation Project has a schedule performance index of 1.33. This result is important because it demonstrates effective program management over multiple projects and improved efficiencies.
2009	Not Met	Did not achieve the annual target of 90%. Six of nine (67%) projects meet the criteria, therefore achieved 74% of the target. Of nine projects: The Ion Beam Laboratory (IBL) Project outperformed expectations and has a cumulative SPI of 1.24 (>1.15). The High Pressure Fire Loop (HPFL) Project has a cumulative CPI of 1.26 (>1.15), thus outperforming expectations. The TA-55 Reinvestment Phase I Project is slightly behind schedule with a cumulative SPI of 0.88 (<0.90). This result is important because it demonstrates effective program management over multiple projects and improved efficiencies.
2008	Not Met	Did not achieve the annual target of 85%. Only 6 of 9 (67%) construction projects earned value data fall within the specified band. This result is important because it demonstrates effective program management over multiple projects and improved efficiencies. The annual target was missed because three projects do not meet the criteria due to late receipt of final FY 08 funding, cost increases, delay in the LANL site-wide EIS, and other factors. Because this target was missed other projects will have to be rebaselined.
2007	Met	This result is important because it demonstrates effective program management over multiple projects and improved efficiencies. The annual target was 80% (FY 2007 result was 100%).

Documentation: - Baselined schedules and major decision points for projects are in individual project plans
- Monthly project progress reports that include Earned Value Management (EVM) data
- DOE Project Assessment and Reporting System (PARS) reports
- NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Readiness in Technical Base and Facilities
Website: http://www.energy.gov/defense_programs/facilities_operations.htm

Performance Goal: *Mission-Essential Facilities*
Enable NNSA missions by providing operational facilities to support nuclear weapon dismantlement, life extension, surveillance, and research and development activities, as measured by percent of scheduled versus planned days mission-critical and mission-dependent facilities are available without missing key deliverables (Annual Outcome)
FY 2011 target: 95%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target with 98.15% for actual FY performance. This result is important because mission essential facilities are needed to support critical nuclear weapons stockpile work.
2010	Exceeded	Exceeded the annual target of 95% by achieving 97.15% availability in FY 2010. This result is important because mission essential facilities are needed to support critical nuclear weapons stockpile work.
2009	Met	Achieved the annual target of 95%. This result is important because mission essential facilities are needed to support critical nuclear weapons stockpile work.
2008	Exceeded	Exceeded the annual target of 95% facility availability of mission-critical and mission-dependent facilities, based on available data; current availability is 98%. This result is important because mission essential facilities are needed to support critical nuclear weapons stockpile work.
2007	Met	This result is important because mission essential facilities are needed to support critical nuclear weapons stockpile work. The annual target was 90% (FY 2007 result was 99%).

Documentation: Milestones supporting the performance measure are documented in the program and site RTBF plans; Quarterly reports from M&O contractors; NA-10 Milestone Reporting Tool (MRT) status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Secure Transportation Asset
Website: http://www.nnsa.energy.gov/securetransportation

Performance Goal: *Delivery Timeliness*
Annual percentage of shipping requests delivered according to schedule. (Annual Efficiency)
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target by ensuring that 96% of annual shipments were delivered according to schedule (target was 90%). This result is important because the measure shows the efficient use of organizational resources to meet the competing shipping requirements of the Nuclear Security Enterprise.
2010	Exceeded	Exceeded the annual target by completing 99% of shipping requests according to schedule (target was 90%). This result is important because it shows the efficient scheduling and use of organizational resources to meet the various customer requirements in the Nuclear Security Enterprise.
2009	Met	Completed the baseline evaluation for this measure. This result is important because the new measure will show the efficient use of resources to meet the customer shipping requirements.

Documentation: Official consolidated report submitted by a federal transportation manager, On-Time Delivery Quarterly Summary Sheet; Secondary documents that support the results are the Master Planning Schedule and the Quarterly Mission Schedule.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Secure Transportation Asset
Website: http://www.nnsa.energy.gov/aboutus/ourprograms/defenseprograms/securetransportation

Performance Goal: *Safe and Secure Shipments*
Annual percentage of shipments completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material (Annual Outcome)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Achieved 100% of the annual target by ensuring all shipments were completed safely and securely. This result is important because it shows that the STA Program is accomplishing its primary mission, especially in light of the increased risks and threats to the Nuclear Security Enterprise.
2010	Met	Achieved 100% of the annual target by completing 100% of shipments safely and securely. This result is important because it shows that the STA Program is accomplishing its primary mission, especially in light of the increased risks and threats to the Nuclear Security Enterprise.
2009	Met	Fully achieved the annual target of completing 100% of shipments safely and securely. This result is important because it indicates mission accomplishment, especially in light of the increased risks and threats to the Nuclear Security Enterprise. For FY 2010, the target will remain at 100%.
2008	Met	Achieved the annual target of completing 100% of shipments safely and securely. This result is important because it indicates mission accomplishment, especially in light of the increased risks and threats to the Nuclear Security Enterprise.
2007	Met	This result is important because it indicates mission accomplishment, especially in light of the increased risks and threats to the Nuclear Security Enterprise. The annual target was 100% (FY 2007 result was 100%).

Documentation: Certification from the senior Program Manager for Mission Operations that there are no known internal or external reports of any compromise or loss. Absence of any DOE Occurrence Reporting and Processing System (ORPS) reports related to shipments. Supporting milestones for the performance measure are documented in the program's plans and in the NA-10 Milestone Reporting Tool (MRT). Official results are posted and retained in the MRT. Secondary documents include: DOE/NRC Forms 741, DOE Forms 1540.2, DoD Forms 1911, OST Forms 1540.01/1540.02, and the DOE Nuclear Material Management and Safeguard System.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Secure Transportation Asset
Website: http://www.nnsa.energy.gov/aboutus/ourprograms/defenseprograms/securetransportation

Performance Goal: *Unit Readiness*
Annual percentage of unit readiness to perform assigned convoy mission-weeks (Long-term Output)
FY 2011 target: 80%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target by achieving a readiness rate of 82% (target was 80%). Despite a decrease in agent staffing levels, the program maintained a predictable transportation capability. This result is important because the measure shows the efficient management of federal agent resources.
2010	Exceeded	Exceeded the annual target by maintaining a readiness rate of 84% (target was 80%). This result is important because the measure shows the efficient management of agent resources to provide a predictable transportation capability.
2009	Met	Fully developed the criteria, methodology, and calculations for this new readiness measure. This result is important because the measure will be changed to a Long-term Output and show the management efforts to improve the readiness level of federal agents and provide a predictable transportation capability.

Documentation: Official consolidated report submitted by a federal manager, "Agent Availability Report;" Supporting milestones for the performance measure are documented in the program's plans and in the NA-10 Milestone Reporting Tool (MRT); Secondary documents that support the results are consolidated Staffing Reports, Recruitment Status Reports, and Nuclear Explosives Duties Lists

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Nuclear Counterterrorism Incident Response
Website: http://nnsa.energy.gov/ourmission/emergencyresponse

Performance Goal: *Emergency Operations Readiness Index*
Emergency Operations Readiness Index measures the overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide. (This Index is measured from 1 to 100 with higher numbers meaning better readiness--the first three quarters will be expressed as the readiness at those given points in time where as the year end will be expressed as the average readiness for the year's four quarters). (Efficiency Measure)
FY 2011 target: 91

Results:

FY	Target	Commentary
2011	Not Met	Program is not on track to achieve Readiness Index for the year. The Fourth Quarter rating is 93%, the average of the each of the year's quarters. Real-world events and a lengthy deployment in Japan for Fukushima response efforts significantly interfered with obtaining required levels of training by our first responders. This result is important since it helps Program Managers identify areas in need of further analysis and improvement in order to achieve our overall Readiness Index for the fiscal year. Program Impact: reduced proficiency for first responders results in lowered readiness to respond to radiological events. Required training has been, or will be rescheduled to accommodate completion by the end of the fiscal year or in first quarter of FY 2012. Some required training is obtained through parties which dictate the available training schedule.
2010	Not Met	The Emergency Operations Readiness Index of 91 out of 100 was not achieved. (4Q index of 88). The impact of this result is important because it assesses emergency response readiness and identified weaknesses in required levels of training and personnel depth, which helped program managers identify and fix deficiencies within key elements of the program.
2009	Met	Achieved the annual target of an Emergency Operations Readiness Index of 91 out of 100 (4Q index of 91). This result is important because it assesses emergency response readiness and helps program managers identify and fix deficiencies within key elements of the program.
2008	Met	Achieved the annual target of an Emergency Operations Readiness Index of 91 out of 100 (4Q index of 91). This result is important because it assesses emergency response readiness and helps program managers identify and fix deficiencies within key elements of the program.
2007	Met	This result is important because it assesses emergency response readiness and helps program managers identify and fix deficiencies within key elements of the program. The annual target was 91 (FY 2007 result was 91).

Documentation: ARMS Reports; Weekly Meetings; Daily situational reports; Daily Infrastructure reports; ARMS website https://arms.orau.gov/; After action reports – evaluators; After action reports – controllers; State, local, & federal reports validating our response efforts; Task Orders/Work Authorizations

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Facilities and Infrastructure Recapitalization
Website: http://www.nnsa.doe.gov/infrastructure.htm#1

Performance Goal: *Deferred Maintenance*
Annual dollar value and cumulative percentage of legacy deferred maintenance baseline of $900 million, funded for elimination by FY 2013 (Long-term Output)
FY 2011 target: $24.7 million (91.7%)

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target by funding the elimination of $35.6M of deferred maintenance (target was $24.7M). This result is important because it demonstrates progress in improving nuclear security enterprise facilities conditions by reducing the deferred maintenance backlog.
2010	Exceeded	Exceeded the annual target by funding the elimination of $65.4M of deferred maintenance with a cumulative result of 89.0 percent (target was $34.1M/85.5 percent). This result is important because it demonstrates progress in improving nuclear security enterprise facilities conditions by reducing the deferred maintenance backlog.
2009	Exceeded	Exceeded the annual target by funding the elimination of $76M with a cumulative result of 82% based on a revised deferred maintenance baseline of $900M (target was $62M). This result is important because it demonstrates progress in improving nuclear weapons complex facilities conditions by reducing the deferred maintenance backlog.
2008	Exceeded	Exceeded the annual target by funding the elimination of $93M with a cumulative result of 73% based on a revised deferred maintenance baseline of $900M (target was $80M). This result is important because it demonstrates progress in improving nuclear weapons complex facilities conditions by reducing the deferred maintenance backlog.
2007	Met	This result is important because it demonstrates progress in improving nuclear weapons complex facilities conditions by reducing the deferred maintenance backlog. The annual target was $60M (38%) (FY 2007 result was $75M (56%)).

Documentation: FIRP Work Authorizations; Site Program Reviews

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Facilities and Infrastructure Recapitalization
Website: http://www.nnsa.doe.gov/infrastructure.htm#1

Performance Goal: *Execution of Projects*
Execute FIRP projects within approved cost and schedule baselines (including BCPs submitted for approval), such that 90 percent of FIRP projects are on schedule to meet established milestones and are within total estimated costs (TEC) (Efficiency)
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target by executing more than 90% of FIRP projects within approved cost and schedule baselines. For the fourth quarter, 95.2% of active FIRP projects are green for cost and 90.5% are green for schedule. This result is important because it demonstrates effective program management with executing multiple projects.
2010	Exceeded	Exceeded the annual target by executing 90% of FIRP projects within approved cost and schedule baselines. For the fourth quarter, 93% of active FIRP projects are green for cost and 92% are green for schedule. This result is important because it demonstrates effective program management with executing multiple projects.

Documentation: Program Summary Reports from NA-16's Baseline Analysis Reporting and Tracking Tool (BARTT); Information Data Warehouse (IDW)

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Site Stewardship
Website: http://www.nnsa.energy.gov/aboutus/ouroperations/apm/environmentalprojectsandoperations

Performance Goal: *Environmental Monitoring and Remediation*
Annual percentage of environmental monitoring and remediation deliverables that are required by regulatory agreements to be conducted at NNSA sites that are executed on schedule and in compliance with all acceptance criteria.
FY 2011 target: 95%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 95% by submitting 100% of the annual environmental monitoring and remediation deliverables required by regulatory agreements at NNSA sites on time and in compliance with all acceptance criteria. This result is important because it prevents notices of violation, fines, and loss of confidence by the regulators often associated with late and insufficient deliverables.
2010	Met	Achieved 100% of the annual target to submit environmental monitoring and remediation deliverables required by the site regulatory agreements to the appropriate state and federal agencies. In FY 2010 no deliverables have been missed. This result is important because it prevents notices of violation, fines, and loss of confidence by the regulators often associated with late and insufficient deliverables.
2009	Met	Achieved the annual target of submitting on schedule and in compliance 95% of the regulatory required environmental and monitoring remediation deliverables. This result is important because it prevents notices of violation, fines, and loss of confidence by the regulators often associated with late and insufficient deliverables.
2008	Exceeded	Exceeded the annual target by submitting 100% of required environmental and monitoring remediation deliverables on schedule and in compliance with requirements. This result is important because it prevents notices of violation, fines, and loss of confidence by the regulators often associated with late and insufficient deliverables.

Documentation: RCRA Permits; monthly and annual reports to regulatory agencies; Compliance Monitoring Plans; Field Logs; Sampling Paperwork; LTS program plan status reports to the site offices

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Site Stewardship
Website: http://hq.na.gov/

Performance Goal: *Special Nuclear Material Removed*
Cumulative percentage of security category I/II Special Nuclear Material removed from Lawrence Livermore National Laboratory
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Exceeded	Shipped 91% cumulative percentage of security category I/II Special Nuclear Material from Lawrence Livermore National Laboratory by the end of FY 2011, against a goal of 90%. LLNL is on track to complete the removal of Category I/II SNM by the end of FY 2012. This result is important because it supports the Secretary of Energy's Material Consolidation Initiative and will enable significant security cost reductions when completed.
2010	Met	Achieved the annual target of having prepared 80% of security category I/II material for removal from the Lawrence Livermore National Laboratory. This result is important because it supports NNSA goal of material consolidation, will allow significant security cost reductions at LLNL, and will reduce risk to the public.

Documentation: Monthly status reports and reviews from program.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Defense Nuclear Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *Assurance of Effective Performance*
Cumulative percentage of completed assessments by executing the DNS Integrated Assessment Planning Schedule and completing 100% of planned assessments annually (Effectiveness Measure)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Completed 100% of planned assessments. Two Defense Nuclear Security (DNS) shadow assessments were completed during Q4 of FY 2011. All scheduled assessments were conducted for the fiscal year. These onsite assessments are important because this allows DNS to have operational awareness of Safeguards and Security activities throughout the National Security Enterprise.

Documentation: Integrated Assessment Plan and applicable reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Defense Nuclear Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *Common Procurement System*
Cumulative cost savings achieved by implementing a common procurement system for selected security equipment (Efficiency Measure)
FY 2011 target: 10%

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target of 5% savings associated with the execution of a common procurement system (10% cumulative savings). NNSA sites continue to procure ammunition from the Department of Defense via their respective procurement channels, resulting in significant cost avoidance (approximately $475,000) and the advantage of military-specification/quality assurance standards. The DNS Commodity Team's (SCT) Interagency Contracting Procurement Team (ICPT) Agreement with Avon/Federal Resources for protective masks/respirators is still in place and continues to be available for all NNSA and non-NNSA/DOE sites. During the fourth quarter, the team continued working on identifying sources for ammunition not available from DoD, body armor, and thermal imagery manufactures and suppliers for common procurement opportunities. This result is important because it demonstrates both time and cost savings.
2010	Met	Fully achieved the annual target of 5% completion of activities associated with the implementation of a common procurement system. The DNS Security Commodity Team established an Interagency Contracting Procurement Team (ICPT) Agreement with Avon for respirators that will yield a 25% savings (over $150,000 savings for two NNSA sites in the fourth quarter). The Team has established and prioritized a list of security equipment to be standardized and is working toward establishing similar ICPT Agreements that all DOE and NNSA sites may use. The process to identify and standardized equipment and establish strategic sourcing capabilities is completed and working well. This result is important to successfully implement security that will keep the NNSA sites secure.

Documentation: Supporting documentation available.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Defense Nuclear Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *Elite Forces*
Cumulative percentage of completion towards modernizing the National Nuclear Security Administration's protective forces in accordance with Tactical Response Force (TRF), as known as "Elite Forces," requirements (Long-term Output)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target of completing 100% of activities toward modernizing the NNSA's protective forces (PF). All milestones have been completed. Sites are implementing TRF-I and TRF-II training curricula, and transitioning to Enterprise Mission Essential Task and Site-Specific Support Task training. Additionally, DNS is fielding a prototype training program during FY 2012 in preparation for full implementation through the NSE in FY 2013. These results are important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world.
2010	Met	Achieved the annual target of completing 60% of activities towards modernizing the NNSA's protective forces. Three milestones were scheduled and completed during the fourth quarter. This result is important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world.
2009	Met	Achieved the annual target of completing 20% of activities towards modernizing the NNSA's protective forces. This result is important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world.

Documentation: DNS Tactical Response Force (TRF) Implementation Plan

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Defense Nuclear Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *Graded Security Protection*
Cumulative percentage of progress, measured in milestones completed towards implementation of all Graded Security Protection (GSP) policy at NNSA sites (Long-term Output)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Not Met	The target of 100% completion of the overall GSP milestones was not met. During the second quarter, Leadership adjusted the performance measure to align with full compliance vice conditional compliance. Full compliance will occur by the end of FY 2012; all but two sites are currently in full GSP compliance. One of the two non-compliant sites is pending de-inventory by the end of FY 2012 and is not required to achieve GSP compliance. The other non-compliant site is on track for compliance by end of FY 2012. DNS will continue to report the performance measure as yellow based on (1) the pending de-inventory and (2) pending full compliance at the final site. NA-10 and NA-1 are aware of the compliance status. This result is important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world.
2010	Met	Achieved the target of 50% completion of the overall GSP milestones. Four milestones were scheduled and completed during the fourth quarter. This result is important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world.
2009	Met	Fully achieved the annual target of 100% completion of the milestones. Progress measured in milestones towards implementing all GSP policies at the NNSA sites was accomplished for this year and was tracked in a Gant Chart from start to finish. This result is important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world. Progress measured in milestones towards implementing all GSP policies at the NNSA sites was accomplished for this year and was tracked in a Gant Chart from start to finish.
2008	Met	Achieved the cumulative target of 100% of the relevant milestones identified for the Pantex site. These milestones were completed prior to the suspension of the 2005 DBT implementation effort, which was superseded by the DOE Graded Security Protection (GSP) policy. This result is important to successfully implement security improvements that will keep the NNSA sites among the best defended and secure facilities in the world.

Documentation: DNS GSP Policy Program Management Plan

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Defense Nuclear Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *NNSA Security Policy Reform*
Cumulative reduction in security requirements as part of the Defense Nuclear Security reform effort by reviewing DOE policies and issuance of NNSA policies (long-term output; reduce 20% of security requirements over the next four years (Efficiency Measure)
FY 2011 target: 5%

Results:

FY	Target	Commentary
2011	Met	Achieved 5% reduction in security requirements this fiscal year. Defense Nuclear Security (DNS) has issued two NNSA Policies (Information Security and Physical Security) which have reduced requirements and is currently reviewing Program Management and Protective Force policies for additional reductions. Supporting documentation available. This result is important because it will demonstrate that DNS's reform effort has reduced security requirements without affecting security throughout the Nuclear Security Enterprise.

Documentation: Supporting documentation available.

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Cyber Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *Cyber Certification and Accreditation*
Annual number of NNSA information assets reviewed for certification and accreditation (Efficiency Measure)
FY 2011 target: 45

Results:

FY	Target	Commentary
2011	Not Met	Did not achieve 45 C&A reviews on information assets only performed 40. Though 45 C&A's were scheduled only 40 were completed. This result is important because the C&A's provide the OCIO evidence that each site has an efficient Cyber Security program. Because this target was missed the efficiency of the Cyber Security Program across the NNSA Complex is less.
2010	Met	Fully achieved the annual target of accrediting NNSA unclassified and classified systems, applications and networks as outlined by NNSA policies. The accreditation packages have been drafted, and have been fully reviewed by all sites. The process has been developed to move to a risk management framework via the current compliance-based process. This result is important because it provided the OCIO with the evidence that NNSA systems, applications and networks have met the certification and accreditation outlined in policy.
2009	Met	Achieved the annual target of accrediting NNSA unclassified and classified systems, applications and networks as outlined by NNSA policies. This result is important because it provided the OCIO with the evidence that NNSA systems, applications and networks have met the certification and accreditation outlined in policy. Completed the annual target of Certification and Accreditations by completing 35 packages by September 30, 2009. These accreditations will provide the OCIO with a tool to measure the effective and efficiency of the cyber security program as it relates to certification and accreditation. The OCIO certification team has completed its quarterly requirement.
2008	Exceeded	Exceeded the annual target of 30 Certifications and Accreditations by completing 42 packages by September 30, 2008. These accreditations will provide the OCIO with a tool to measure the effective and efficiency of the cyber security program as it relates to certification and accreditation. The OCIO certification team has completed its quarterly requirement. This result is important because it provides a measure for the accuracy of the cyber security program.

Documentation: Certification and Accreditation Plans

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Cyber Security
Website: http://nnsa.doe.gov/secuirty.htm

Performance Goal: *Cyber Security Reviews*
Annual average percentage of Cyber Security reviews conducted by the Office of Health, Safety and Security (HSS) at NNSA sites that resulted in the rating of "effective" (based on last HSS review at each site over 2 Cyber Security topical areas) (Long-term Outcome)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Achieved the annual rating of effective on 100% of cyber security reviews conducted by the Office Health, Safety and Security (HSS) at NNSA sites. This result is important because these reviews provide the OCIO with evidence that each site has an effective Cyber security program.
2010	Data Not Available	This measure was discontinued for the fiscal year by the NNSA Administrator.
2009	Met	Achieved the annual target of an HSS rating of effective on 100% of cyber security elements at NNSA. This result is important because it ensure that NNSA system and network have met their certification and accreditation requirements as outlined in DOE, NNSA and Federal policy.
2008	Met	Achieved the annual target of receiving an HSS rating of effective on a cumulative 100% of cyber security elements at NNSA sites for the two assessments conducted. Although HSS only completed two of the three planned assessments for cyber security during this reporting period, this decision was made outside of Cyber Security program's control. This result is important because it ensure that the NNSA systems and network have met their certification and accreditation requirements as outlined in DOE, NNSA and Federal policies.
2007	Met	This result is important because it ensure that NNSA system and network have met their certification and accreditation requirements as outlined in DOE, NNSA and federal policy. The annual target was 57% (FY 2007 result was 57%).

Documentation: HSS Final Assessment Report

Strategic Goal: 3: Securing our Nation
Office: NNSA/Weapons Activities
Program: Cyber Security
Website: http://www.nnsa.doe.gov/security.htm

Performance Goal: *Cyber Security Site Assessment (SAV)*
Annual percentage of planned Cyber Security Site Assessment Visit (SAV) conducted by the Office of the Chief Information Officer (OCIO) Cyber Security Program Manager (CSPM) at NNSA sites that resulted in a rating of effective (Annual Output)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Not Met	Did not achieve the annual target of effective on 100% of cyber security assessments conducted at 9 NNSA field sites. Two site assessments were conducted in the fourth quarter, missing the target of 9 sites by 3 for the year. This measure was missed due to a shortfall in travel funding for the federal staff. As a result of missing 3 of the 9 site assessments this measure does not provide a complete picture of cyber security health across the enterprise.
2010	Not Met	Did not achieve the annual target of an OCIO rating of effective on 100% of cyber security assessments conducted at 9 NNSA field sites. This measure had a 6-month moratorium; the assessments began again in May 2010 with 9 completed as of 30 Sep 2010 resulting in a 90% effective rating. This result is important because these assessments provide the OCIO with evidence that each site has implemented cyber security policies and procedures as outlined.
2009	Met	Achieved the annual target of an OCIO rating of effective on 100% of cyber security assessments conduct at 4 NNSA field sites. The third quarter site assessment has been completed with an effective rating at KCP. This result is important because these assessments will provide the OCIO with evidence that each site has implement cyber security policies and procedures as outlined.
2008	Not Met	Largely achieved the annual target by achieving a cumulative percentage of 85% on the SAVs conducted by the OCIO. This result is important because it ensures that the NNSA systems and network have met their certification and accreditation requirements as outlined in DOE, NNSA and Federal policies. The annual target was missed because the NNSA assessment process has been completely rewritten to meet new and changing requirements. The OCIO was not able to complete the scheduled assessment within during FY 2008.

Documentation: OCIO Site Assessment Visit Report; Cyber Security Check List

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and Verification Research and Development
Website: www.nnsa.energy.gov

Performance Goal: *Independent Merit Review*
Cumulative percentage of active research projects for which an independent R&D merit review of the project's scientific quality and mission relevance has been completed during the second year of effort (and again within each subsequent three year period for those projects found to be of merit)
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Met the annual cumulative percentage target of 100% of the 110 active scheduled research projects receiving independent merit reviews. The independent reviews provide extremely valuable, unbiased feedback to the Program Managers on the progress and impact of each research project. They assist in future funding decisions, directions in R&D, and transition to stakeholders. This result is important because it verifies scientific quality and mission relevance of each research project.
2010	Met	Achieved the cumulative percentage target of 100% of active research projects receiving independent merit reviews. This result is important because it verifies scientific quality and mission relevance of each research project.
2009	Met	Achieved the cumulative target of 100% of active research projects receiving independent merit reviews. This result is important because it verifies scientific quality and mission relevance of each research project.
2008	Met	Achieved the annual target of 100% of active research projects receiving independent merit reviews. This result is important to verify scientific quality and mission relevance of each research project.
2007	Met	This result is important to verify scientific quality and mission relevance of each research project. The annual target was 100% (FY 2007 result was 100%).

Documentation: Quarterly reports; Annual independent review status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and Verification Research and Development
Website: www.nnsa.energy.gov

Performance Goal: *Merit Reviewed Journals/Forums*
Annual number of articles published in merit reviewed professional journals representing leadership in advancing science and technology knowledge
FY 2011 target: 200

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 200 merit reviews publications by achieving 237. This result is important because it demonstrates the program is a leader in advancing nonproliferation science and technology knowledge.
2010	Exceeded	Exceeded the annual target of 200 merit-reviewed publications by achieving 273. This result is important because it demonstrates the program is a leader in advancing nonproliferation science and technology knowledge.
2009	Exceeded	Exceeded the annual target of 200 merit-reviewed publications by achieving 331. This result is important because it demonstrates the program is a leader in advancing nonproliferation science and technology knowledge.
2008	Exceeded	Exceeded the annual target of 200 merit-reviewed publications by publishing 235 articles. This result is important because it demonstrates the program is a leader in advancing nonproliferation science and technology knowledge.
2007	Met	This result is important because it demonstrates the program is a leader in advancing science and technology knowledge. The annual target was 200 (FY 2007 result was 220).

Documentation: Quarterly reports/papers; Annual peer-review publications; Other forums for reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and Verification Research and Development
Website: www.nnsa.energy.gov

Performance Goal: *Plutonium Production Detection*
Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect Plutonium production activities. (Progress is measured against the baseline criteria and milestones published in the ?FY 2006 R&D Requirements Document?).
FY 2011 target: 65%

Results:

FY	Target	Commentary
2011	Met	Met annual target of 65% cumulative progress towards demonstrating the next generation of technologies to detect plutonium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2010	Met	Achieved the annual target of 50% cumulative percentage of progress towards demonstrating the next generation of technologies to detect plutonium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2009	Met	Achieved the annual target of 30% cumulative progress towards demonstrating the next generation of technologies to detect plutonium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2008	Met	Achieved the annual target of 25% cumulative progress towards demonstrating the next generation of technologies to detect plutonium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2007	Met	This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities. The cumulative target was 20% (FY 2007 result was 20%).

Documentation: Program Plan/Roadmap document; Memorandum for Record (unclassified, located in R&D, certified by ADA)

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and Verification Research and Development
Website: www.nnsa.energy.gov

Performance Goal: *Research and Development Detonation Detection*
Annual index that summarizes the status of all NNSA detonation detection R&D deliveries that improve the nation's ability to detect nuclear detonations.
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target of Nuclear Detonation Detection (NDD) deliveries. This result is important because it tracks timeliness for delivery of NDD products within customer timelines/schedules, and identifies potential impacts on the nation's ability to detect nuclear detonations.
2010	Met	Achieved the annual index target of 90% of Nuclear Detonation Detection (NDD) R&D deliveries. This result is important because it tracks timeliness for delivery of NDD products within customer timelines/schedules, and identifies potential impacts on the nation's ability to detect nuclear detonations.
2009	Met	Achieved the annual target of Nuclear Detonation Detection (NDD) deliveries. This result is important because it tracks timeliness for delivery of NDD products within customer timelines/schedules, and identifies potential impacts on the nation's ability to detect nuclear detonations.
2008	Met	Exceeded the annual target of Nuclear Detonation Detection (NDD) deliveries. Although slow funding start at the beginning of the fiscal year limited production efforts and placed several deliveries behind schedule, the restoration of funds and work reprioritization, elimination of some testing and incurring increased risk enabled recovery of key deliverable schedule by end-of-year. This result is important because it tracks timeliness for delivery of NDD products within customer timelines/schedules, and identifies potential impacts on the nation's ability to detect nuclear detonations.
2007	Met	--

Documentation: Quarterly reports; Final delivery transmittal letters to user agencies for satellite payloads (Consent to Ship letters); Integrated Research Product Releases

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and Verification Research and Development
Website: www.nnsa.energy.gov

Performance Goal: *Special Nuclear Material Detection*
Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect Special Nuclear Material movement. (Progress is measured against the baseline criteria and milestones published in the ?FY 2006 R&D Requirements Document).
FY 2011 target: 80%

Results:

FY	Target	Commentary
2011	Met	Met the annual target of 80% cumulative progress towards demonstrating the next generation of technologies to detect Special Nuclear Material movement. This result is important because it improves U.S. capability to detect the illicit transport and diversion of special nuclear material (SNM).
2010	Met	Achieved the annual target of 60% cumulative percentage of progress towards demonstrating the next generation of technologies to detect Special Nuclear Material movement. This result is important because it improves U.S. capability to detect the illicit transport and diversion of special nuclear material (SNM).
2009	Met	Achieved the cumulative target of 33% cumulative progress towards demonstrating the next generation of technologies to detect Special Nuclear Material movement. This result is important because it improves U.S. capability to detect the illicit transport and diversion of special nuclear material (SNM).
2008	Met	Achieved the annual target of 27% cumulative progress towards demonstrating the next generation of technologies to detect Special Nuclear Material movement. This result is important because it improves U.S. capability to detect the illicit transport and diversion of special nuclear material (SNM).
2007	Met	This result is important because it improves U.S. capability detect the illicit transport and diversion of special nuclear material (SNM). The cumulative target was 20% (FY 2007 result was 20%).

Documentation: Program Plan/Roadmap document; Memorandum for Record (unclassified, located in R&D, certified by ADA)

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and Verification Research and Development
Website: www.nnsa.energy.gov

Performance Goal: *Uranium-235 Production Detection*
Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect Uranium-235 production activities. (Progress is measured against the baseline criteria and milestones published in the ?FY 2006 R&D Requirements Document?).
FY 2011 target: 50%

Results:

FY	Target	Commentary
2011	Met	Met the annual target of 50% cumulative progress towards demonstrating the next generation of technologies to detect uranium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2010	Met	Achieved the annual target of 30% cumulative percentage of progress towards demonstrating the next generation of technologies to detect uranium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2009	Met	Achieved the annual target of 25% cumulative progress towards demonstrating the next generation of technologies to detect uranium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2008	Met	Achieved the annual target of 20% cumulative progress towards demonstrating the next generation of technologies to detect uranium production activities. This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities.
2007	Met	This result is important because it increases the U.S. capability to detect clandestine nuclear weapons production activities. The cumulative target was 15% (FY 2007 result was 15%).

Documentation: Program Plan/Roadmap document; Memorandum for Record (unclassified, located in R&D, certified by ADA)

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and International Security
Website: www.http://nnsa.energy.gov/nonproliferation/nis

Performance Goal: *Elimination of Russian Highly Enriched Uranium (HEU)*
Annual number of special monitoring visits completed to the four Russian processing facilities that downblend highly enriched uranium (HEU) to low-enriched uranium to monitor and confirm the permanent elimination of 30 metric tons of Russian HEU from the Russian weapons stockpile under the HEU Purchase Agreement.
FY 2011 target: 24

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target by completing 24 special monitoring visits to the four Russian uranium-processing facilities subject to the 1993 Highly Enriched Uranium (HEU) Purchase Agreement. During the 4th Q four SMVs were completed. This result is important because confidence-building monitoring activities conducted in Russia provide assurance that the Russian Federation is eliminating excess weapons-usable material, thereby adhering to its nonproliferation obligations under the HEU Purchase Agreement.
2010	Met	Achieved 100% of the annual target by completing 24 special monitoring visits to the four Russian uranium-processing facilities subject to the 1993 Highly Enriched Uranium (HEU) Purchase Agreement. This result is important because confidence-building monitoring activities conducted in Russia provide assurance that the Russian Federation is eliminating excess weapons-usable material, thereby adhering to its nonproliferation obligations under the HEU Purchase Agreement.
2009	Met	Fully achieved the annual target of 24 special monitoring visits to the four Russian uranium-processing facilities subject to the 1993 Highly Enriched Uranium (HEU) Purchase Agreement. This result is important because confidence-building monitoring activities conducted in Russia provide assurance that the Russian Federation is eliminating excess weapons-usable material, thereby adhering to its nonproliferation obligations under the HEU Purchase Agreement.

Documentation: Sandia National Laboratories database records and original input documents; Physical examination of processing facilities; International Nuclear Export Control program database records and original input documents

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and International Security
Website: www.http://nnsa.energy.gov/nonproliferation/nis

Performance Goal: *Global Initiatives to Prevent Proliferation (GIPP) Non-USG Project Funding*
Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions
FY 2011 target: 85%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the cumulative target of 85% non-USG project funding contributions obtained relative to cumulative USG GIPP funding contributions. In 4Q, an additional 12 projects were approved, 5 with cost sharing. A cumulative total of 90.2% cost sharing was achieved by 4Q. This result is important because it maximizes non-USG funding sources to prevent the migration of weapons of mass destruction scientists and personnel to terrorist organizations and states.
2010	Met	Achieved the cumulative target of 82% project funding contributions obtained relative to cumulative USG GIPP funding contributions. This result is important because it maximizes non-USG funding sources to prevent the migration of weapons of mass destruction scientists and personnel to terrorist organizations and states of concern.
2009	Met	Fully achieved the cumulative target of 81% project funding contributions obtained relative to cumulative USG GIPP funding contributions. This result is important because it maximizes non-USG funding sources to prevent the migration of weapons of mass destruction scientists and personnel to terrorist organizations and states of concern.
2008	Exceeded	Exceeded the cumulative target of 78% project funding contributions obtained relative to cumulative USG GIPP funding contributions by 2% for a total of 80%. This result is important because it sustains the economic development of the closed cities and prevents the migration of weapons of mass destruction scientist and personnel to terrorists or states of concern.
2007	Met	This result is important because it sustains the economic development of the closed cities and prevents the migration of weapons of mass destruction scientists and personnel to terrorists or states of concern. The cumulative target was 75% (FY 2007 result was 75%).

Documentation: Data in project management database (entered by National Labs); Annual USIC survey of members

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and International Security
Website: http://nnsa.energy.gov/nonproliferation/nis

Performance Goal: *Nuclear Export Control Program*
Cumulative number of countries where International Nuclear Export Control program is engaged that have export control systems that meet critical requirements
FY 2011 target: 22

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the cumulative target of 22 by 5, for a total of 27 countries engaged that have export control systems that meet critical requirements. This number was derived from a review of updates to 73 INECP country engagement plans (countries in which INECP has an active program). This result is important because it demonstrates the number of countries that, through engagement by INECP: (1) have control lists consistent with the WMD regimes; (2) conduct outreach to producers and trans-shippers of WMD-related commodities; (3) engage in the sharing of information between technical experts, license reviewers, and front-line enforcers; and (4) have customized WMD Commodity Identification Training materials and technical guides.
2010	Exceeded	Exceeded the cumulative target of 11 countries having export control systems that meet critical requirements. To date, 21 countries have export control systems that meet critical requirements. This result is important because it demonstrates the number of countries that, through engagement by INECP (1) have control lists consistent with the WMD regimes; (2) conduct outreach to producers and trans-shippers of WMD-related commodities; (3) engage in the sharing of information between technical experts, license reviewers, and front-line enforcers; and (4) have customized WMD Commodity Identification Training materials and technical guides.
2009	Met	Fully achieved the cumulative target of 9 countries having export control systems that meet critical requirements. This result is important because it demonstrates the number of countries that, through engagement by INECP (1) have control lists consistent with the WMD regimes; (2) conduct outreach to producers and trans-shippers of WMD-related commodities; (3) engage in the sharing of information between technical experts, license reviewers, and front-line enforcers; and (4) have customized WMD Commodity Identification Training materials and technical guides.

Documentation: International Nuclear Export Control program database records and original input documents; Sandia National Laboratories database records and original input documents

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and International Security
Website: www.http://nnsa.energy.gov/nonproliferation/nis

Performance Goal: *Russian Weapons-Usable Highly Enriched Uranium (HEU) Eliminated*
Cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement
FY 2011 target: 432

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 432 metric tons (MT), by 1MT, for a total of 433 MT by confirming the elimination of an additional 30 MT of HEU. During the fourth quarter, 14 MT was eliminated. This result is important because it provides assurance that weapons-grade material is being eliminated from Russia's stockpile and no is longer available for use.
2010	Exceeded	Exceeded the cumulative target of 402 MT by confirming the elimination of additional HEU in FY 2010 resulting in a cumulative total of 403 MT. This result is important because it provides assurance that weapons-grade material is being eliminated from Russia's stockpile and is no longer available for use in the nuclear weapons program.
2009	Exceeded	Exceeded the cumulative target of 372 MT by confirming the elimination of an additional 33 MT of HEU in FY2009, resulting in cumulative total of 375 MT. This result is important because it provides assurance that weapons-grade material is being eliminated from Russia's stockpile and is no longer available for use in the nuclear weapons program. The cumulative target will be increased to 402 MT in FY2010 in support of the long term target of 500 MT by 2013.
2008	Exceeded	Exceeded the cumulative target by confirming the elimination of 345 MT of HEU in FY 2008 (target was 342 MT). This result is important because it provides assurance that weapons-grade material is being eliminated from Russia's stockpile, and is no longer available for use in the nuclear weapons program.
2007	Met	This result is important because it provides assurance that weapons-grade material is being eliminated from Russia's stockpile, and no longer available for use in the nuclear weapons program. The cumulative target was 312 (FY 2007 result was 315).

Documentation: Status Report on U.S.-Russian Megatons to Megawatts Program (www.usec.com) ; Russian HEU to LEU Contract Summary of Shipments, Amounts, Value, Payments, and Schedule (provided by USEC); Russian HEU to LEU Contract Summary based on Fiscal Year (provided by SAIC); Monitoring visit trip reports, process declarations, and mass flow reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Nonproliferation and International Security
Website: http://nnsa.energy.gov/aboutus/ourprograms/nonproliferation/programoffices/officenonproliferationinternationalsecurity

Performance Goal: *Safeguards Systems*
Annual number of safeguards systems deployed and used in international regimes and other countries that address an identified safeguards deficiency
FY 2011 target: 5

Results:

FY	Target	Commentary
2011	Met	Achieved 100% of the annual target by deploying five safeguards systems to international regimes and other countries. In the fourth quarter, four technologies were transferred to South Africa, including two U/Pu Inspection Systems and two ISOCS Inspection Systems. Finally, the ORIGEN-ARP code was transferred to Euratom to allow for independent and more efficient verification of spent fuel in storage ponds.
2010	Exceeded	Exceeded the cumulative target of 4 safeguards systems deployed (by deploying a total of 10) and used in international regimes and other countries. To date, 19 safeguards systems have been deployed and used in international regimes and other countries. This result is important because it allows international regimes and countries to properly account for and control nuclear materials to prevent use in illicit activities.
2009	Met	Fully achieved the annual target of 3 safeguards systems deployed and used in international regimes and other countries. This result is important because it allows international regimes and countries to properly account for and control nuclear materials to prevent use in illicit activities.

Documentation: Shipping Records; Technical reports produced as a result of the technology being transferred; Monthly Reports (generated for each of the countries with which INECP works.)

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: International Nuclear Materials Protection and Cooperation
Website: www.nnsa.energy.gov

Performance Goal: *Highly Enriched Uranium (HEU) Conversion to Low Enriched Uranium (LEU)*
Cumulative metric tons of Highly-Enriched Uranium converted to Low- Enriched Uranium.
FY 2011 target: 13.5

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 13.5 MT of HEU downblended to LEU by 0.5 MT, a total of 14 MT. This result is important because it prevents the theft/diversion of vulnerable nuclear weapons for use by terrorists.
2010	Met	Achieved annual target by blending down a cumulative total of 12.6 metric tons (MTs) of HEU to LEU. This result is important because it prevents the theft/diversion of excess HEU.
2009	Met	Fully achieved the annual target by blending down a cumulative total of 11.7 metric tons (MTs) of HEU to LEU. This result is important because it prevents the theft/diversion of excess HEU.
2008	Met	Achieved 97% of the annual target by blending down a cumulative total of 10.7 metric tons (MTs) of HEU to LEU. This result is important because it prevents the theft/diversion of excess HEU.
2007	Met	This result is important because it prevents the theft/diversion of excess HEU. The cumulative target was 9.5 (FY 2007 result was 9.8).

Documentation: Monthly U.S. monitoring visits to the downblending sites to validate process results; Contract deliverable downblending and monthly status reports

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: International Nuclear Materials Protection and Cooperation
Website: www.nnsa.energy.gov

Performance Goal: *Material Protection, Control and Accountability (MPC&A) Upgrades - Buildings*
Cumulative number of buildings containing weapons usable material with completed MPC&A upgrades
FY 2011 target: 218

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target of MPC&A upgrades to 218 buildings containing weapons-usable material. As of Q4, the program has completed 5 buildings for a cumulative total of 218 buildings. This result is important because it prevents the theft/diversion of vulnerable nuclear weapons for use by terrorists.
2010	Met	Fully achieved the target by completing MPC&A upgrades at a cumulative total of 213 buildings, an increase of 3 buildings in FY 2010. This result is important because it prevents the theft/diversion of vulnerable nuclear weapons for use by terrorists.
2009	Met	Fully achieved the cumulative target by completing MPC&A upgrades at a cumulative total of 210 buildings. This result is important because it prevents the theft/diversion of vulnerable nuclear weapons for use by terrorists.
2008	Met	Achieved 96% of the annual target by completing MPC&A upgrades at a cumulative total of 181 buildings. This result is important because it prevents the theft/diversion of vulnerable nuclear weapons for use by terrorists.
2007	Met	--

Documentation: Statements of Work and Contracts for Security Upgrade Construction and System Installation; Progress Reports from Contractors and Russian Sites; Assurance Visit Reports; Monthly Reports by Project; Quarterly Reports by Project; Annual Close-Out Reports by Project; Metric Information Management On-line Database

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: International Nuclear Materials Protection and Cooperation
Website: www.nnsa.energy.gov

Performance Goal: *Material Protection, Control, and Accountability (MPC&A) Regulations*
Cumulative number of MPC&A regulations in the development phase for the Russian Federation and FSU countries.
FY 2011 target: 198

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of 198 MPC&A regulations placed in the development phase. As of the end of Q4, the program has placed a cumulative total of 204 regulations in the development phase, exceeding the annual target by 6 regulations. This result is important because it prevents the theft/diversion of excess HEU.
2010	Not Met	Largely achieved the annual target by placing a cumulative number of 186 MPC&A regulations in the development phase for Russian and other FSU countries. The target was missed because the US Project Team's (USPT) Russian and Belorussian counterparts have experienced significant staffing issues over the past year, causing delays in the pace of deliverables related to regulations development. Because this target was missed, the schedule for placing regulations in the development phase is slightly behind schedule, but a recovery schedule is in place to ensure all delinquent regulations are in the development phase by the end of FY 2011. Therefore, there is no impact to completing the goal.
2009	Met	Achieved 98% of the annual target by placing a cumulative total of 165 regulations in the development phase for the Russian Federation and FSU countries. This result is important because it prevents the theft/diversion of excess HEU.

Documentation: Regulatory team-maintained database to track development and adoption of each MPC&A regulation by task order and date

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: International Nuclear Materials Protection and Cooperation
Website: www.nnsa.energy.gov

Performance Goal: *Megaports with Host Country Cost Sharing*
Cumulative number of Megaports with host country cost-sharing, resulting in estimating $40 million less cost to the U.S. program (estimated cost sharing value)
FY 2011 target: 14/$73 million

Results:

FY	Target	Commentary
2011	Not Met	Did not meet the annual target. As of the fourth quarter of FY 2011 the program has completed a cumulative 13 Megaports with cost-sharing, with no additional cost-sharing agreements occurring during the first or second quarter. The target for FY 2011 was 14 Megaports with cost-sharing. The one Megaport with cost-sharing planned for FY 2011 has shifted into FY 2012 and will be completed in the 1st quarter of that year. It appears the program is unlikely to reach the target of $73 million in host-country funding in FY 2011. The current value is $49.8 million. This result is important because these cost sharing agreements result in reduced costs for the United States.
2010	Not Met	Did not fully achieve the cumulative target of 12 Megaports with host country cost-sharing (Estimated cost sharing value). This result is important because these cost sharing agreements result in reduced costs for the U.S. Second Line of Defense Program. The Program fell short of the annual cumulative target as three Megaports have been delayed into FY 2011, thereby lowering the cumulative number of host countries with cost sharing down to 9 for FY 2010, resulting in a cost sharing value of $43 million. The target was missed because US Project Team's (USPT) Russian and Belorussian counterparts have experienced significant staffing issues over the past year, causing delays in the pace of deliverables related to regulations development. Because this target was missed, the schedule for placing regulations in the development phase is slightly behind schedule, but has little impact on achieving the goal.
2009	Not Met	Slightly behind in achieving the annual target of 8 Megaports with $40 million in host country cost sharing by having a cumulative total of 7 Megaports with host country cost sharing. This result is important because these cost sharing agreements result in reduced costs for the U.S. Second Line of Defense Program.
2008	Not Met	Did not achieve the annual target of completing five Megaports under a cost-sharing arrangement. Completed three cost-sharing Megaports with estimated cost-savings to the U.S. Government of $14 million (target was 5 ports with a total estimated cost-savings of $24 million). This result is important because these cost sharing agreements result in reduced costs for the U.S. Second Line of Defense Program. The annual target was missed because of schedule delays at the port of Zeebrugge in Belgium and at the port of Veracruz in Mexico. Because this target was missed the decreased costs to the US program will not be achieved until early 2009.

Documentation: Schedules, trip reports, acceptance testing documentation

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: International Nuclear Materials Protection and Cooperation
Website: www.nnsa.energy.gov

Performance Goal: *Second Line of Defense (SLD) Sites*
Cumulative number of Second Line of Defense (SLD) sites with nuclear detection equipment installed (Cumulative number of Megaports completed)
FY 2011 target: 463(45)

Results:

FY	Target	Commentary
2011	Not Met	The program did not achieve annual target of 463 Second Line of Defense sites with nuclear detection equipment, which includes 45 megaports. The program completed 460 SLD sites, including 39 megaports. Achieving this result is important because it provides host governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials. Because this target was missed, deployment of detectors for high-transit ports must be delayed in the coming fiscal years.
2010	Not Met	Slightly below annual target by achieving installations of radiation detection equipment at a cumulative total of 399 sites (including 34 Megaports). This result is important because it provides host governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials. The Program fell short of the annual cumulative target by seven Megaports. The Core program completed 57 sites, which exceeded its target of 55 sites. Because the target was not met, the program will accelerate implementation of construction at port sites and plans to complete all ports by the end of FY 2011.
2009	Exceeded	Exceeded the cumulative target by completing installations of radiation detection equipment at a cumulative total of 335 sites (including 27 Megaports). This result is important because it provides host governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials.
2008	Exceeded	Exceeded the annual target by completing installations of radiation detection equipment at a cumulative total of 232 sites (including 19 Megaports). This result is important because it provides host governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials.
2007	Not Met	This result is important because it provides host governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials. The cumulative target of 173 (12) was missed (FY 2007 result was 162 (12)) because delays in several countries impacted the program's ability to complete the 63 sites anticipated in FY 2007. Because this target was missed there is a reduced capability in these countries to detect and deter illicit trafficking in nuclear and other radioactive materials in these countries.

Documentation: Schedules, trip reports, acceptance testing documentation

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Elimination of Weapons-Grade Plutonium Production
Website: http://www.nnsa.energy.gov/aboutus/ourprograms/nonproliferation/programoffices/fissilematerialsdisposition

Performance Goal: *Constructing Zheleznogorsk Fossil Plant*
Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating the shut down of one weapons-grade plutonium production reactor

FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Met the cumulative target of completing 100% of the U.S.-funded construction complete. Critical Decision-4 (Project Closeout) was approved by the NNSA on July 5, 2011. This result is important because completion of the fossil fuel plant will replace energy capacity from the last Russian plutonium production reactor ensuring it is permanently shut down and the production of weapons-grade plutonium is eliminated.
2010	Not Met	Largely achieved the annual target through a cumulative percentage completion of 92% (target was 98%). The annual target was missed because of insufficient manpower to expedite work and recover schedule. Because this target was missed, delivery of hot water to Zheleznogorsk will be delayed by at least three months. This result is important because completion of the fossil fuel plant will replace energy capacity from the last Russian plutonium production reactors allowing it to be shutdown, and the production of weapons-grade plutonium to be eliminated.
2009	Exceeded	Exceeded the cumulative target of 70% completion in FY 2009 by achieving 71% completion. This result is important because completion of the fossil fuel plant will replace energy capacity from the last Russian plutonium production reactors allowing it to be shutdown, and the production of weapons-grade plutonium to be eliminated.
2008	Not Met	Did not achieve the annual target of 62.6% completion (completed 46% of the fossil plant). This result is important because completion of the fossil fuel plant will replace energy capacity from one of the three remaining Russian plutonium production reactors allowing it to be shutdown and the production of weapons-grade plutonium to be eliminated. The annual target was missed because of delays in design, procurement, and construction. Because this target was missed, the ADE-2 reactor may not be shut down in 2010 producing as much as 0.4 metric tons of plutonium in 2011. This additional 0.4 metric tons of plutonium, however, will be offset by the early shutdown of the two Seversk reactors.
2007	Met	This result is important because completion of the fossil fuel plant will replace energy capacity from one of the three remaining Russian plutonium production reactors allowing it to be shutdown, and the production of weapons-grade plutonium to be eliminated. The cumulative target was 33.6% (FY 2007 result was 34%).

Documentation: Zheleznogorsk Monthly Progress and Cost Performance Report

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Elimination of Weapons-Grade Plutonium Production
Website: http://www.nnsa.doe.gov/na%2d20/na22_index.shtml

Performance Goal: *Russian Weapons-Grade Plutonium Production*
Annual percentage of Russian weapons-grade plutonium production capability eliminated from its 2003 baseline of 1.2 MT/yr (0.4 MT per reactor per year).

FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Achieved the annual target of 100% reduction in the production of weapons-grade plutonium. All three reactors were shut down ahead of schedule. Two Seversk reactors were shut down in April and June 2008; Zheleznogorsk reactor was shut down in April 2010. This result is important because it is part of the mission need to shut down the last three plutonium-production reactors in Russia.
2010	Exceeded	Exceeded the annual target of 67% reduction in the production of weapons-grade plutonium by completing the remaining reactor in FY 2010. All three reactors were shut down ahead of schedule. Two Seversk reactors were shut down ahead of schedule in April and June 2008; Zheleznogorsk reactor was shut down in April 2010. This result is important because it is part of the mission need to shut down the last three plutonium-production reactors in Russia.
2009	Met	Fully achieved the annual target of 67% reduction in the production of weapons-grade plutonium. Two of the three reactors were shut down ahead of schedule in April and June 2008. This result is important because it is part of the mission need to shut down the last three plutonium-production reactors in Russia.

Documentation: Seversk Monthly Reports No. 57 dated May 27, 2008 and No. 59 dated July 21, 2008; Zheleznogorsk Monthly Progress and Cost Performance Report

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Fissile Materials Disposition
Website: http://www.nnsa.energy.gov/aboutus/ourprograms/nonproliferation/programoffices/fissilematerialsdisposition

Performance Goal: *Mixed Oxide (MOX) Fuel Fabrication Facility*
Cumulative percentage of the design, construction, and cold start-up activities completed for the Mixed Oxide (MOX) Fuel Fabrication Facility.

FY 2011 target: 62%

Results:

FY	Target	Commentary
2011	Not Met	Did not meet the FY 2011 target of 62% cumulative progress for the MOX facility by achieving 57.9% cumulative progress. The project achieved 93% of the 4th quarter target with cumulative Cost and Schedule Performance Indexes of 0.93 each. Roof construction on the fuel fabrication facility continued. Total volume of concrete placed per month in the quarter surpassed prior months. The Technical Support Building continued with notable progress. Roofing, siding and interior work are well underway. Fabrication and delivery of equipment, glovebox shells, internal components, and electrical items continue with challenges. The annual target was missed in large part due to the lack of qualified subcontractors/suppliers due to Nuclear Renaissance (dormancy). IMPACT: Because this target was missed, the project remains behind the early finish completion date of June 2015. This is 16 months ahead of the contract specified October 2016 milestone date. The projected completion date of September 2015 was maintained through resequencing of concrete placements and the focus on the active gallery module installations. This result is important because it demonstrates progress toward the Department's goal of disposing of 34 metric tons of surplus U.S. weapons-grade plutonium.
2010	Not Met	Largely achieved the target of completing a cumulative total of 49% of the facility and equipment design, construction, and cold start-up activities for the MOX facility. The project is at 48% completion as of the end of the 4th quarter which results in achieving 98% of the annual target. This goal was largely achieved despite significant challenges tranisitioning to a new civil/structural subcontractor and equipment vendors struggling with NQA-1 compliance. This result is important because it demonstrates progress toward the Department's goal of disposing of 34 metric tons of surplus U.S. weapons-grade plutonium.
2009	Met	Achieved the cumulative target by completing a total of 38.3% of the facility and equipment design, construction, and cold start-up activities for the MOX facility. This result is important because it demonstrates progress toward the Department's goal of disposing of 34 metric tons of surplus U.S. weapons-grade plutonium.
2008	Met	Achieved the cumulative target of 30% of the facility and equipment design, construction, and cold start-up activities for the MOX facility. The initial estimated impact from the 2008 appropriation reduction has been mitigated for FY 2008 activities, however postponing efforts into the outyears has resulted in a request to change the project's cost and schedule baseline. This result is important because it demonstrates progress toward the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapons-grade plutonium.
2007	Met	This result is important because it demonstrates progress toward the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapons-grade plutonium. The annual target was 24% (FY 2007 result was 24%).

Documentation: Earned Value Management System (EVMS) data from MOX FFF Monthly Status Report - Earned value determined through physical examination, observation, computation, and inspection; as well as original documents such as a signed statement or email verifying target completion

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Fissile Materials Disposition
Website: http://www.nnsa.energy.gov/aboutus/ourprograms/nonproliferation/programoffices/fissilematerialsdisposition

Performance Goal: *U.S. Highly Enriched Uranium (HEU) Downblended*
Cumulative amount of surplus U.S. highly enriched uranium (HEU) down-blended or shipped for down-blending.

FY 2011 target: 136

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the target of down-blending or shipping for down-blending 136 cumulative metric tons of surplus U.S. HEU. The program has achieved over 100% of the year end target by downblending/shipping a cumulative 137.1 metric tons of HEU. All downblending activities for this fiscal year were completed on schedule and under budget. This result is important because it is contributing to the Department?s goal of disposing of surplus U.S. HEU.
2010	Exceeded	Exceeded the annual cumulative target of down-blending or shipping for down-blending 130 cumulative metric tons of surplus U.S. HEU. The program has down-blended 133 MT of surplus HEU through the end of the year resulting in completing 102% of the cumulative target. This result is important because it is contributing to the Department's goal of disposing of surplus U.S. HEU.
2009	Exceeded	Exceeded the cumulative target by down-blending or shipping for down-blending 127.4 cumulative metric tons of surplus U.S. HEU. This result is important because it is contributing to the Department?s goal of disposing of surplus U.S. HEU.
2008	Exceeded	Exceeded the annual target by down-blending or shipping for down-blending 14 metric tons (MT) of surplus U.S. HEU in FY 2008, for a cumulative amount of 117 MT. The target was 112 MT and shipments were accelerated due to DOT certification expiring on certain existing shipping containers. This result is important because it is contributing to the Department's goal of disposing of surplus U.S. HEU.
2007	Met	This result is important because it is contributing to the Department's goal of disposing of surplus U.S. HEU. The cumulative target was 103MT (FY 2007 result was 103MT).

Documentation: BWXT Y-12 monthly program status documents - Physical examination and inspection as documented in material control and accounting data forms and reports that the site is required to maintain under Special Nuclear Materials handling/shipping requirements; Original documents such as a signed statement or email verifying target completion

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Fissile Materials Disposition
Website: http://www.nnsa.doe.gov/na%2d20/na22_index.shtml

Performance Goal: *Waste Solidification Building (WSB)*
Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building (WSB).

FY 2011 target: 65%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target by completing 70% of the facility and equipment design, construction, and cold start-up activities for the WSB. The project achieved 108% of the fourth quarter target with cumulative Cost and Schedule Performance Indices of 1.06 and 0.88, respectively. The main focus of work is installation of ventilation ductwork, piping, cable trays, and fireproof coatings in the process building. System turnovers from construction to startup testing have started. This result is important because it demonstrates progress toward the Department's goal of disposing of 34 metric tons of surplus U.S. weapons-grade plutonium.
2010	Exceeded	Exceeded the annual target of completing a cumulative percentage total of 45% of the facility and equipment design, construction, and cold start-up activities for the WSB. The project is at 47% completion as of the end of the 4th quarter resulting in achieving 104% of the annual target. This result is important because it demonstrates progress toward the Department's goal of disposing of 34 metric tons of surplus U.S. weapons-grade plutonium.
2009	Not Met	Slightly behind schedule in achieving the cumulative target by completing a total of 26.4% of the facility and equipment design, construction, and cold start-up activities for the WSB. The annual target will be slightly missed because long-lead equipment procurements, fabrication of the cementation units, and balance of plant construction activities have not been performed as early as originally planned. However, vendor and subcontractor completion dates remain unchanged and no impact to the project completion date is expected. This result is important because it demonstrates progress toward the Department?s goal of disposing of 34 metric tons of surplus U.S. weapons-grade plutonium.

Documentation: EVMS and cost data from the WSB consolidated monthly status reports - Earned value determined through physical examination, observation, computation, and inspection; as well as Original documents such as a signed statement or email verifying target completion

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Global Threat Reduction Initiative
Website: http://www.nnsa.doe.gov/na%2d20/na22_index.shtml

Performance Goal: *Highly Enriched Uranium (HEU) Reactors Converted or Shutdown*
Cumulative number of HEU reactors converted or verified as shutdown prior to conversion.

FY 2011 target: 75

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target to convert or verify the shutdown of a cumulative 75 reactors; a cumulative total of 76 research reactors have been converted or verified as shutdown. In the first quarter, one new research reactor was verified as shutdown prior to conversion or converted (China). There were no research reactors that were verified as shutdown prior to conversion or converted in the second quarter. In the third quarter, there were three new research reactors that were verified as shutdown prior to conversion or converted (Czech Republic, Russia [2]). In the fourth quarter there were no new reactors converted or verified as shutdown. This result is important because to date conversion of these reactors has resulted in HEU avoidance of ~360/kg per year.
2010	Exceeded	Exceeded the annual target of converting or verifying the shutdown of a cumulative 71 reactors; a cumulative total of 72 research reactors have been converted or verified as shutdown. In the first quarter, no new research reactors were verified as shutdown prior to conversion or converted. In the second quarter, three research reactors were verified as shutdown (FS-4 and FS-5 reactors at Bauman Moscow State Technical University in Russia and STRELA reactor in Russia) and one research reactor was converted (Kyoto University Research Reactor in Japan). In the third quarter, one research reactor was shut down (RECH-2 research reactor in Chile). This result is important because to date conversion of these reactors has resulted in HEU avoidance of ~360/kg per year.
2009	Not Met	Nearly met (98.5%) the annual target of converting or verifying the shutdown of a cumulative 68 HEU reactors; a cumulative total of 67 research reactors have been converted or verified as shutdown. In the first quarter, one new research reactor was verified as shutdown prior to conversion. In the second quarter, no additional reactors were converted or shutdown prior to conversion. In the third quarter, one additional research reactor, IRT-200 in Bulgaria, was shut down prior to conversion. In the fourth quarter, three additional research reactors were converted (University of Wisconsin, BRR in Hungary, and NRAD in Idaho). Through September 2009, a cumulative total of 67 research reactors have been converted or verified as shutdown prior to conversion (an additional five reactors converted or verified as shutdown prior to conversion in FY 2009). Action Plan: The conversion of the KUR research reactor in Japan did not occur because the French government directed that the shipment of the LEU replacement fuel would not be allowed through the Gulf of Aden due to pirate activity; alternative shipping solutions are under review, with expected delivery of the replacement fuel expected in Japan during the first quarter of FY 2010. This result is important because to date conversion of these reactors has resulted in HEU avoidance of ~335/kg per year.
2008	Met	Achieved the annual target by converting or verifying the shutdown of a cumulative 62 HEU reactors. The annual target reflects approved revisions due to FY2008 funds and the Continuing Resolution. This result is important because to date conversion of these reactors has reduced the amount of civil commerce in HEU by 300/kg per year.
2007	Met	This result is important because to date conversion of these reactors has reduced the amount of civil commerce in HEU by 275/kg per year. The cumulative target was 53 (FY 2007 result was 55).

Documentation: GTRI Scorecard; Written Notification of conversion; Conversion Report

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Global Threat Reduction Initiative
Website: http://www.nnsa.doe.gov/na%2d20/na22_index.shtml

Performance Goal: *Nuclear and Radiological Sites Protected*
Cumulative number of buildings with high priority nuclear and radiological materials secured.
FY 2011 target: 1,081

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of securing a cumulative total of 1,081 buildings with high-priority nuclear and radiological materials; a cumulative total of 1,187 buildings have been secured. In the first quarter, an additional 26 international buildings and 6 domestic buildings were secured. In the second quarter, an additional 28 international and 8 domestic buildings were secured. In the third quarter, an additional 33 international and 11 domestic buildings were secured. In the fourth quarter, an additional 36 international and 68 domestic buildings were secured. This result is important because it reduces the risk posed by nuclear and radioactive materials worldwide that could be used in crude nuclear bombs and radiological dispersal devices.
2010	Exceeded	Exceeded the annual target of securing a cumulative total of 855 buildings with high-priority nuclear and radiological materials; a cumulative total of 971 buildings have been secured. In the first quarter, an additional 9 international buildings and 12 domestic buildings were secured. In the second quarter, an additional 18 international buildings and 27 domestic buildings were secured. In the third quarter, an additional 29 international buildings and 19 domestic buildings were secured. In the fourth quarter, an additional 45 international buildings and 107 domestic buildings were secured. This result is important because it reduces the risk posed by nuclear and radioactive materials worldwide that could be used in crude nuclear bombs and radiological dispersal devices.
2009	Exceeded	Exceeded (101.6%) the annual target of securing a cumulative total of 694 buildings with high-priority nuclear and radiological materials; a cumulative total of 705 buildings have been secured. In the first quarter, an additional 21 international buildings and two domestic buildings were secured. In the second quarter, an additional 22 international and 11 domestic buildings were secured. In the third quarter, an additional two international and one domestic buildings were secured. In the fourth quarter, an additional 84 international buildings and 48 domestic buildings were secured. Through September 2009, a cumulative total of 705 buildings have been secured (an additional 191 buildings in FY 2009). This result is important because it reduces the risk posed by nuclear and radioactive materials worldwide that could be used in crude nuclear bombs and radiological dispersal devices.
2008	Exceeded	Exceeded the annual target of protecting a cumulative total of 730 vulnerable, high-priority international radiological sites, for a cumulative total of 755 sites protected. The annual target reflects approved revisions due to FY2008 funds and the Continuing Resolution. This result is important because it reduces the risk posed by radioactive materials worldwide that could be used in radiological dispersal devices. The cumulative target calculation methodology has changed for FY 2009; the recalculated FY 2008 target is 516.
2007	Met	This result is important because it reduces the risk posed by radioactive materials worldwide that could be used in radiological dispersal devices. The cumulative target was 590 (FY 2007 result was 599).

Documentation: GTRI Scorecard; Monthly notification of protection; Work team reports; Global Threat Reduction Initiative Programmatic Guidelines for Site Prioritization and Protection Implementation

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Global Threat Reduction Initiative
Website: http://www.nnsa.doe.gov/na%2d20/na22_index.shtml

Performance Goal: *Nuclear Material Removed*
Cumulative number of kilograms of vulnerable nuclear material (HEU and plutonium) removed or disposed
FY 2011 target: 3,297

Results:

FY	Target	Commentary
2011	Not Met	Missed the annual target to remove or dispose of a cumulative total of 3,297 kilograms of HEU and plutonium; a cumulative total of 3,125 kilograms have been removed or disposition. The FY 2011 target slippage is due to lack of requested budget being provided on-time. GTRI is not a level-of-effort program, and this work is implemented through large contracts with foreign governments and private industries. GTRI's removal efforts require up-front funding for contracts to implement these large and complex threat reduction projects that take 6-10 months or more to implement. The FY 2011 target of a cumulative total of 3,297 kilograms was based on receiving the President's FY 2011 request of $559 million. However, the DNN appropriation was $414 million less the request; DOE allocated $123 million of the cuts to GTRI and funds arrived nine months into the fiscal year and were incrementally allotted due to the multiple continuing resolutions. The significantly reduced and delayed funding has resulted in the program not being able to award critical contracts needed to complete the removals of HEU and/or plutonium that were originally estimated. In the first quarter, an additional 232 kilograms of HEU were removed (43.5 kilograms from Poland, 88 kilograms from Belarus, 13.1 kilograms from Serbia, 50.7 kilograms from Ukraine, 1.4 kilograms from Canada, 3.4 kilograms from Italy, 12.7 kilograms from Belgium, and 19.7 kilograms from the United States) There were no additional kilograms of HEU removed or disposed of during the second or third quarters. In the fourth quarter an additional 39.7 kilograms of HEU were removed or disposed of (33 kilograms down blended in Kazakhstan, 5.8 kilograms removed from South Africa, and 0.9 kilograms removed from Canada). This result is important because this effort will minimize the amount of weapons-usable material around the world.
2010	Exceeded	Exceeded the annual target of removing a cumulative total of 2,767 kilograms of HEU and plutonium; a cumulative total of 2,852.8 kilograms have been removed. In the first quarter, an additional 192.2 kilograms of HEU were removed (187 kilograms from Poland and 5.2 kilograms from Libya). In the second quarter, an additional 183.2 kilograms of HEU was removed (137.4 kilograms from Poland, 5 kilograms from Japan, 12.4 kilograms from Israel, 5.3 kilograms from Turkey, 4.9 kilograms from Italy, and 18.2 kilograms from Chile). In the third quarter, an additional 111.4 kilograms of HEU was removed (55.9 kilograms from Ukraine, 43.5 kilograms from Poland, and 12 kilograms from the Czech Republic). In the fourth quarter, an additional 49.4 kilograms of HEU was removed (43.5 kilograms from Poland, 3.7 kilograms from the United Kingdom, and 2.2 kilograms from the United States). This result is important because this effort will minimize the amount of weapons-usable material around the world.
2009	Exceeded	Exceeded (100.2%) the annual target of removing a cumulative total of 2,311 kilograms of HEU and plutonium; a cumulative total of 2,317 kilograms have been removed. In the first quarter, an additional 154.5 kilograms of HEU were removed from Hungary and 6.9 kilograms of HEU were removed from Canada. In the second quarter, no additional kilograms of HEU and plutonium were removed. In the third quarter, an additional 73.7 kilograms of HEU were removed from Kazakhstan, 53.8 kilograms of HEU were removed from Romania, 14.6 kilograms of HEU were removed from Australia, and 29.0 kilograms of plutonium were removed from Italy. In the fourth quarter, an additional 18.0 kilograms of HEU were removed from Hungary, 11.6 kilograms of HEU were removed from Italy, and 4.8 kilograms of HEU were removed from Taiwan. Through September 2009, a cumulative total of 2,316.6 kilograms of HEU and plutonium have been removed (an additional 367 kilograms in FY 2009). This result is important because this effort will minimize the

		amount of weapons-usable material around the world.
2008	Met	Achieved 91% of the annual target of removing a cumulative total of 2,133 kilograms of HEU and plutonium, resulting in the removal of 1,948 kilograms of HEU. The annual target reflects approved revisions due to FY2008 funds and the Continuing Resolution. This result is important because this effort will minimize the amount of weapons-usable material around the world.
2007	Met	This result is important because this effort will minimize the amount of weapons-usable material around the world. The cumulative target was 1,671 (FY 2007 result was 1,791).
Documentation: GTRI Scorecard; Notification of removal; Remove Report		

Strategic Goal: 3: Securing our Nation
Office: NNSA/Defense Nuclear Nonproliferation
Program: Global Threat Reduction Initiative
Website: http://www.nnsa.doe.gov/na%2d20/na22_index.shtml

Performance Goal: *Radiological Sources Removed*
Cumulative number of excess domestic radiological sources removed or disposed
FY 2011 target: 28,000

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target to remove a cumulative total of 28,000 excess domestic radiological sources; a cumulative total of 28,743 sources have been removed. In the first quarter an additional 565 sources were removed. In the second quarter, an additional 1,092 sources were removed. In the third quarter, an additional 200 sources were removed. In the fourth quarter, an additional 714 sources were removed. This result is important because it minimizes the amount of excess and unwanted radioactive material that could be used in radiological dispersal devices.
2010	Exceeded	Exceeded the annual target of removing a cumulative total of 25,214 excess domestic radiological sources; a cumulative total of 26,172 sources have been removed. In the first quarter an additional 1,253 sources were removed. In the second quarter, an additional 579 sources were removed. In the third quarter, an additional 520 sources were removed. In the fourth quarter, an additional 806 sources were removed. This result is important because it minimizes the amount of excess and unwanted radioactive material that could be used in radiological dispersal devices.
2009	Exceeded	Exceeded (104.6%) the annual target of removing a cumulative total of 22,000 excess domestic radiological sources; a cumulative total of 23,014 sources have been removed. In the first quarter, an additional 1,656 sources were removed. In the second quarter, an additional 931 sources were removed. In the third quarter, an additional 1,309 sources were removed. In the fourth quarter, an additional 462 sources were removed. Through September 2009, a cumulative total of 23,014 sources have been removed (an additional 4,358 sources in FY 2009). This result is important because it minimizes the amount of excess and unwanted radioactive material that could be used in radiological dispersal devices.
2008	Exceeded	Exceeded the annual target by removing a cumulative total of 18,656 excess domestic radiological sources. The annual target reflects approved revisions due to FY2008 funds and the Continuing Resolution. This result is important because this effort will minimize the amount of excess and unwanted radioactive material that could be used in radiological dispersal devices.
2007	Met	This result is important because this effort will minimize the amount of excess and unwanted radioactive material that could be used in radiological dispersal devices. The cumulative target was 15,455 (FY 2007 result was 15,503).

Documentation: GTRI Scorecard; Monthly notification of removals; Work team reports; Radiological recovery life cycle plan; GTRI website http://osrp.lanl.gov/

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Naval Reactors
Website: http://www.nnsa.doe.gov/navalreactors.htm

Performance Goal: *A1B Reactor Plant Design*
Cumulative percentage of completion on the next-generation aircraft carrier reactor plant design
FY 2011 target: 94%

Results:

FY	Target	Commentary
2011	Met	Fully achieved the annual target of completing a cumulative 94% of the next-generation aircraft carrier reactor plant design. In the 4th quarter of FY 2011, the program delivered major core components to the shipyard and installation of the closure head on the lead core. This result is important because it provides the Navy with next-generation aircraft carrier propulsion plant technology that increases core energy, provides nearly three times the electric plant generating capability and will require half of the reactor department sailor's needed as compared to today's CVNs.
2010	Met	Fully met the target of 91% cumulative percentage of completion on the next-generation aircraft carrier reactor plant design. This result is important because it provides the Navy with next-generation aircraft carrier propulsion plant technology that increases core energy, provides nearly three times the electric plant generating capability and will require half of the reactor department sailor's needed as compared to today's CVNs.
2009	Met	Achieved 100% of the annual target by completing a cumulative 88% of the next-generation aircraft carrier reactor plant design. This result is important because it provides the Navy with next-generation aircraft carrier propulsion plant technology that increases core energy, provides nearly three times the electric plant generating capability and will require half of the reactor department sailor's needed as compared to today's CVNs. The annual target will be increased to 91% in FY 2010 in support of the long-term target of completing 100% of the next-generation aircraft carrier reactor plant design by 2015.
2008	Met	Achieved the annual target by completing a cumulative 85% of the next-generation aircraft carrier reactor plant design. This result is important because it provides the Navy with next-generation aircraft carrier propulsion plant technology that increases core energy, provides nearly three times the electric plant generating capability and will require half of the reactor department sailor's needed as compared to today's CVNs.
2007	Met	This result is important because it provides the Navy with next-generation aircraft carrier propulsion plant technology that increases core energy, provides nearly three times the electric plant generating capability and will require half of the reactor department sailor's needed as compared to today's CVNs. This will enable the Navy to meet current forecasted operational requirements. The cumulative target was 80% (FY 2007 result was 80%).

Documentation: CVN 21 Propulsion Plant Planning Estimate and Actual Reporting

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Naval Reactors
Website: http://www.nnsa.doe.gov/navalreactors.htm

Performance Goal: *Fleet Reactor Plant Operations*
Cumulative miles steamed of safe, reliable, militarily effective nuclear propulsion plant operation supporting national security requirements
FY 2011 target: 146 million miles

Results:

FY	Target	Commentary
2011	Met	Fully achieved the annual target of completing 146 million miles safely steamed. In the fourth quarter of FY 2011, nuclear-powered warships steamed approximately 708,141 miles. This result is important because it measures the safety and reliability of operating nuclear propulsion plants.
2010	Exceeded	Exceeded target of 144 million cumulative miles steamed, of safe, reliable, militarily effective nuclear propulsion plant operation supporting National security requirements by completing 144,982,625 miles safely steamed. This result is important because it measures the safety and reliability of operating nuclear propulsion plants.
2009	Met	Achieved 100% of the annual target by completing 142 million cumulative miles safely steamed. This result is important because it measures the safety and reliability of operating nuclear propulsion plants. The annual target will be increased to 144 million miles in FY 2010 in support of the long-term target of 154 million miles safely steamed by 2015.
2008	Met	Achieved the annual target by completing 140 million cumulative miles safely steamed. This result is important because it measures the safety and reliability of operating nuclear propulsion plants.
2007	Met	This result is important because it measures the safety and reliability of operating nuclear propulsion plants. The cumulative target was 138 million miles (FY 2007 result was 138 million miles).

Documentation: Commissioned Ship Operating Reports (automated quarterly data from the fleet)

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Naval Reactors
Website: http://www.nnsa.doe.gov/navalreactors.htm

Performance Goal: *Naval Reactors Facility Condition Index (FCI)*
Annual Naval Reactors complex-wide aggregate Facility Condition Index, as measured by deferred maintenance per replacement plant value for all program facilities and infrastructure
FY 2011 target: 4%

Results:

FY	Target	Commentary
2011	Met	Fully achieved the annual target of a Facility Condition Index (FCI) of 4 percent or less by achieving 4%. In the fourth quarter of FY 2011, the Program completed approximately 25% of planned maintenance activities across all four sites. This result is important because it assesses the operational condition of program facilities to ensure program infrastructure is maintained in order to accomplish mission activities in the safest, most reliable, most effective, and most efficient manner.
2010	Met	Fully met the target of 4% Annual Naval Reactors complex-wide aggregate Facility Condition Index, as measured by deferred maintenance per replacement plant value for all program facilities and infrastructure. This result is important because it assesses the operational condition of program facilities to ensure program infrastructure is maintained in order to accomplish mission activities in the safest, most reliable, most effective, and most efficient manner.
2009	Met	Achieved 100% of the annual target by achieving a Facility Condition Index (FCI) of less than 4%. This result is important because it assesses the operational condition of program facilities to ensure program infrastructure is maintained in order to accomplish mission activities in the safest, most reliable, most effective, and most efficient manner. The annual target will remain constant in FY 2010 at achieving a FCI of less than 4%.
2008	Exceeded	Exceeded the annual target by achieving a Facility Condition Index (FCI) of less than 4%. This result is important because it assesses the operational condition of program facilities to ensure program infrastructure is maintained in order to accomplish mission activities in the safest, most reliable, most effective, and most efficient manner.
2007	Met	This result is important because it assesses the operational condition of program facilities to ensure program infrastructure is maintained in order to accomplish mission activities in the safest, most reliable, most effective, and most efficient manner. The annual target was 5% (FY 2007 result was 5%).

Documentation: Deferred maintenance and plant replacement value reported in FIMS

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Naval Reactors
Website: http://www.nnsa.doe.gov/navalreactors.htm

Performance Goal: *Program Operations*
Annual percentage of program operations that have no adverse impact on human health or the quality of the environment
FY 2011 target: 100%

Results:

FY	Target	Commentary
2011	Met	Fully achieved the annual target of ensuring that 100 percent of program operations have no adverse impact on human health or the quality of the environment. A review of radiation monitoring results through the fourth quarter of FY 2011 confirms that Program operations have had no adverse impact on human health or the environment during the quarter. This result is important because it assesses human health and environmental risks associated with program operations.
2010	Met	Fully achieved the annual target of ensuring that 100 percent of program operations have no adverse impact on human health or the quality of the environment. The performance of the Program in the areas of environmental, safety, and health is rated satisfactory based on continuing assessments performed in these areas. This result is important because it assesses human health and environmental risks associated with program operations.
2009	Met	Achieved 100% of the annual target by ensuring that 100% of program operations have no adverse impact on human health or the quality of the environment. This result is important because it assesses human health and environmental risks associated with program operations. The annual target will remain constant in FY 2010 at ensuring 100% of program operations have no adverse impact on human health or the quality of the environment.
2008	Met	Achieved the annual target by ensuring that 100% of program operations have no adverse impact on human health or the quality of the environment. This result is important because it assesses human health and environmental risks associated with program operations.
2007	Met	This result is important because it assesses human health and environmental risks associated with program operations. The annual target was 100% (FY 2007 result was 100%).

Documentation: Annual Monitoring Report - monitors the scheduled maintenance work that is completed vs. scheduled maintenance work that is deferred.

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Naval Reactors
Website: http://www.nnsa.doe.gov/navalreactors.htm

Performance Goal: *Utilization of Test Reactor Plants*
Annual utilization factor for operation of test reactor plants
FY 2011 target: 90%

Results:

FY	Target	Commentary
2011	Not Met	Largely achieved the annual target achieving a utilization factor of 88.6% (target was 90%). The fourth quarter rate was approximately 92.5%. This result is important because it represents a cost-effective way of training Naval nuclear plant operators. However, there was unplanned shutdown time required at the MARF reactor, combined with the low first quarter performance, precluded the ability to meet the FY 2011 utilization goal of 90%.
2010	Exceeded	Exceeded the FY 2010 target of achieving a utilization rate of 90%. The cumulative utilization rate for fiscal year 2010 is 94.7%. This result is important because it represents a cost-effective way of training Naval nuclear plant operators.
2009	Exceeded	Exceeded the annual target by achieving a utilization rate of 91%. This result is important because it represents a cost-effective way of training Naval nuclear plant operators. The annual target will remain constant in FY 2010 at achieving a minimum utilization rate of 90% for the operation of test reactor plants. *Does not reflect a Naval Reactors directed hold on prototype operations to improve staff performance and training.
2008	Exceeded	Exceeded the annual target by achieving a utilization rate of 92%. This result is important because it represents a cost-effective way of training Naval nuclear plant operators.
2007	Met	This result is important because it represents a cost-effective way of training Naval nuclear plant operators. The annual target was 90% (FY 2007 result was 95%).

Documentation: Prototype Annual Activity Schedule and Actual Reporting

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Office of the Administrator
Website: http://www.nnsa.doe.gov

Performance Goal: *Federal Administrative Costs*
Maintain the Office of the Administrator federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%
FY 2011 target: 5.9%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the annual target of the NNSA federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at 5.9% or less. 4Q results: 4.5%. This result is important because it demonstrates a prudent use of valuable resources.
2010	Exceeded	Exceeded the annual target of the NNSA federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at 5.9% or less. 4Q results: 5.2%. This result is important because it demonstrates a prudent use of valuable resources.
2009	Exceeded	NNSA exceeded the annual target of 5.9%. Year-end result: 5%.

Documentation: DOE accounting report; Excel spreadsheet with percent calculations

Strategic Goal: 3: Securing our Nation
Office: NNSA
Program: Office of the Administrator
Website: http://energy.gov/management/office-management/operational-management/project-management-career-development-program

Performance Goal: *Project Management Career Development Program Certifications*
Cumulative percent of active NNSA projects, which are managed by a Federal Project Director, certified at the appropriate level through the Project Management Career Development Program
FY 2011 target: 85%

Results:

FY	Target	Commentary
2011	Exceeded	Exceeded the cumulative target of 85%. 93% of NNSA's 27 sizable capital asset projects were managed by an appropriately certified Federal Project Director (FPD) in FY 2011. This result is important because managing projects with a FPD who is certified to the appropriate Level is required by a DOE Order and consistent with prudent project management standards.
2010	Exceeded	Exceeded the annual target of 80%. 87% of NNSA's active capital asset projects were managed by an appropriately certified Federal Project Director at the end of the fourth quarter. This result is important because all active NNSA projects managed by a Federal Project Director (FPD) certified to the appropriate Level is required by DOE Order 413.3A.
2009	Exceeded	NNSA exceeded the cumulative target of 74%. Actual Year End Results: 76% of NNSA's active capital asset projects are managed by an appropriately certified Federal Project Director. This result is important because DOE Order 413.3A requires that all active NNSA projects be managed by a Federal Project Director (FPD) certified to the appropriate level.

Documentation: NNSA Federal Project Directors List; Master Spreadsheet POCs (2009 12 31), pdf files

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *EM Efficiency Measure*
Remain within the limits of no greater than a 10% negative cost and schedule variance for the overall cost-weighted mean cost and schedule performance indices for the operating projects, the capital projects, and line item projects that are baselined and under configuration control

Results:

FY	Target	Commentary
2011	Met	The EM program has met its annual efficiency goal since its inception in FY 2006. At the end of FY 2011 the actual CPI was 0.99 and the SPI was 0.97. This efficiency measure is being retired as of the end of FY 2011 and will be replaced by another measure that will better reflect the activities of the EM program.
2010	Met	The EM program has met its annual efficiency goal since its inception in FY 2006. At the end of FY 2010 the actual CPI was 0.95 and the SPI was 0.95.
2009	Met	The EM program has met its annual efficiency goal since its inception in FY 2006. The FY 2009 actual CPI was 0.98 and the SPI was 0.96.
2008	Met	After compiling the EM Earned Value Management (EVM) Project information to Date, the current information was calculated: The cost-weighted mean cost performance index 1.02 The cost-weighted mean schedule performance index 0.99
2007	Met	After compiling the IPABS-IS Earned Value Management Project to Date Data with approved EVM data the current information was calculated: The cost-weighted mean cost performance index - 1.01 The cost-weighted mean schedule performance index - 0.99

Documentation: DOE PAR system

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *Enriched Uranium Containers Packaged for Disposition*
Package for disposition a cumulative total of 7,953 canisters of enriched uranium

Results:

FY	Target	Commentary
2011	Exceeded	8,007 packages disposed
2010	Exceeded	The Department has met its target.
2009	Met	Packaged for disposition a cumulative total of 7,629 containers. This is an increase of 81 containers over the FY 2008 actual total.
2008	Met	The complex was able to accelerate its schedule and exceed its target for FY 2008. This was due to increased activity at the SRS.
2007	Met	The ID site is on schedule for this metric, however, the Savannah River Site (SRS) is behind schedule for FY 2007. This is due to a revised schedule shift that was negotiated with the new contractors for this project.

Documentation: Shipping Manifests and Disposal Records

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *High Level Waste Packaged for Disposition*
Package for disposition a cumulative total of 3,571 Canisters of High Level Waste

Results:

FY	Target	Commentary
2011	Not Met	Cumulative 3,526 canisters have been packaged. Work will continue throughout FY 2012.
2010	Exceeded	The Department packaged for disposition a cumulative total of 3,260 containers of high level waste. This is 4 containers more than the target of 3,256 containers targeted to be completed by the end FY 2010.
2009	Exceeded	Packaged for disposition a cumulative total of 3,070 containers of high-level waste. This is an increase of 196 containers over the FY 2008 actual total. The positive variance is due to excellent feeding and pouring operations and the increased facility pouring time for the Defense waste processing facility at the SRS.
2008	Met	The complex was able to accelerate its schedule and exceed its target for FY 2008. The positive variance is due to excellent feeding and pouring operations and the increased facility pouring time for the Defense Waste Processing Facility at the SRS.
2007	Met	The Savannah River Site (SRS) completed packaging 160 canisters (86 percent) of high level waste. The processing and packaging of this waste contributes to the reduction in the amount of high-risk radioactive liquid waste in the Department's inventory.

Documentation: Quality Assurance Inspection Records for waste packaging.

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *Nuclear Facilities*
Complete remediation work at a cumulative total of nuclear facilities

Results:

FY	Target	Commentary
2011	Met	Achieved target of 94 nuclear facilities.
2010	Not Met	The Department has completed work at a cumulative total of 94 nuclear facilities versus a target of 99 Nuclear Facilities. In the coming year, the EM program will re-evaluate its near-term targets and priorities. Future work on this measure will include activities dedicated to the decontamination and decommissioning of nuclear facilities throughout the complex.
2009	Exceeded	Completed a cumulative total of 93 nuclear facilities. This is an increase of 4 facilities over the cumulative total of 89 facilities completed at the end of FY 2008.

Documentation: Decommissioning Project Final Report. State and federal regulator acceptance of completion report.

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *Radioactive Facilities*
Complete a cumulative total of 400 radioactive facilities

Results:

FY	Target	Commentary
2011	Not Met	Cumulative 393 radioactive facilities have been completed vice a target of 400. Future work on this measure will include continued activities dedicated to the decontamination and decommissioning of radioactive facilities throughout the EM complex throughout FY 2012.
2010	Met	The site has met its target, completing a cumulative total of 369 radioactive facilities.
2009	Exceeded	Completed a cumulative total of 363 radioactive facilities. This is an increase of 15 nuclear facilities over the FY 2008 actual. Completing this work demonstrates the ability of the EM program to deliver significant reduction in environmental, safety, and security risks.
2008	Met	Decontamination and Decommissioning activities at Idaho, and Oak Ridge contributed to this measure as well as evaluation of work done at the West Valley Demonstration Plant in New York as well as Portsmouth, Ohio, and Paducah, Kentucky, contributed to this measure.

Documentation: Decommissioning Project Final Report. State and federal regulator acceptance of completion report.

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *Release Site Remediation Completions*
Complete remediation work at a cumulative total of 7,158 release sites

Results:

FY	Target	Commentary
2011	Not Met	A cumulative 7,111 release sites have been completed. Future work on this measure will include continued environmental remediation activities dedicated to completing release sites throughout the EM complex throughout FY 2012.
2010	Not Met	The Department completed FY 2010 with a cumulative total of 6,979 release sites behind schedule for 4 Remediation Completions from its annual target of 6,983 release sites. This is due to delays at the Oak Ridge site for one remediation completion, which is expected in the coming year. The remaining shortfall is due Idaho National Laboratory 9. This variance will be resolved as the result of renegotiation the regulatory agreement between INL and the state of Idaho. Future work on this measure will include activities aimed at completing remediation work throughout the complex.
2009	Not Met	Completed remediation work at a cumulative total of 6,788 release sites. Negotiations with regulators for the EM sites are ongoing, to insure final approval which is required in order for the site to be counted as complete.
2008	Not Met	The Department completed remediation work at a cumulative total of 6,687 release sites, this is a shortfall of 60 release sites from the original FY 2008 target. This is largely due to delays at Richland, Sandia, and Los Alamos National Laboratory (LANL).
2007	Met	The Department completed FY 2007 ahead of schedule by 78 release sites. This is due to increased cleanup activities at a variety of sites including Idaho, the Nevada Test Site and the Lawrence Berkeley National Laboratory where the Department declared the site to be physically complete in FY 2007.

Documentation: State and federal regulator acceptance of the Remedial Action Report.

Strategic Goal: 3: Securing our Nation
Office: Environmental Management
Program: Environmental Management
Website: http://www.em.doe.gov/pages/budgetperformance.aspx

Performance Goal: *TRU Waste Disposition*
Disposition of a cumulative total of 76,728 cubic meters of transuranic waste consisting of 116 cubic meters of Remote Handled TRU and 76,612 cubic meters of Contact Handled TRU

Results:

FY	Target	Commentary
2011	Not Met	Cumulative 76,494 cubic meters of transuranic waste have been disposed. The sites across the DOE complex will continue characterizing, packaging, and shipping TRU waste throughout FY 2012.
2010	Exceeded	At the end of FY 2010 EM dispositioned a cumulative total of 70,744 cubic meters of transuranic waste consisting of 116 cubic meters of Remote Handled TRU and 70,628 cubic meters of Contact Handled TRU.
2009	Exceeded	Disposition of a cumulative total of 63,586 cubic meters of transuranic waste consisting of a cumulative total of 130 cubic meters of Remote Handled TRU (RH-TRU) and cumulative total of 63,456 cubic meters of Contact Handled TRU (CH-TRU).
2008	Not Met	Overall, the complex completed FY 2008 behind schedule by 560 cubic meters of TRU waste: consisting of 112 cubic meters of Remote Handled TRU and 448 cubic meters of Contact Handled TRU. This negative variance was due to a variety of reasons: poor weather condition that prevented shipments, and several delays at the Waste Isolation Pilot Plant (WIPP) in FY 2008. During FY 2008, WIPP was shut down for several weeks in order to repair a water main break; also, WIPP also stopped activities for a self-imposed safety pause.
2007	Met	The Department is ahead of schedule for FY 2007 by 298 cubic meters. This is largely due to accelerated shipments from a variety of sites including Idaho, Richland and the SRS.

Documentation: Shipping Manifests.

Strategic Goal: 3: Securing our Nation
Office: Legacy Management
Program: Legacy Management
Website: www.lm.doe.gov

Performance Goal: *Maintain the protectiveness of installed environmental remedies*

Results:

FY	Target	Commentary
2011	Met	87- All sites were inspected in accord with existing agreements. Failure to conduct the inspections would have had the potential to make the Department liable to penalties and litigation.
2010	Exceeded	Inspections completed in accord with regulatory requirements and agreements with regulators
2009	Exceeded	Due to the continuing resolution, the target was held at 82 sites. However, circumstances allowed site inspections for additional sites. Supporting documentation is located in Legacy Management's Grand Junction Office.
2008	Met	Inspections were conducted at all sites within LM's responsibility (82 sites in FY 2008). Maintenance was performed as needed to maintain site integrity. Protectiveness of all site remedies was confirmed.
2007	Met	Inspections were conducted at 70 sites, including 34 sites that are "records only."

Documentation: Supporting documentation is maintained in the Grand Junction, CO, office of the Office of Legacy Management

Strategic Goal: 3: Securing our Nation
Office: Legacy Management
Program: Legacy Management
Website: www.lm.doe.gov

Performance Goal: *Surveillance and Maintenance Cost*
Reduce the cost of performing long-term surveillance and monitoring activities by 2% while meeting all regulatory requirements to protect human health and the environment. Reduction is measured in percent from the life-cycle baseline. Goal is 2% reduction below the baseline for that year. Final goal is a 10% reduction by FY 2015.

Results:

FY	Target	Commentary
2011	Met	Achieved efficiencies in conduct of long-term and surveillance functions to realize the savings over the target of a 2% reduction. The baseline was $36.9 million and the actual costs were $31.6 million; a reduction of 14.3%.
2010	Exceeded	Achieved planned 2% reduction from its baseline for FY 2010.
2009	Data Not Available	The preliminary results indicate the target of 2% cost reduction was exceeded with savings of 3.8%
2008	Met	Actual cost savings exceeded the 2% target.
2007	Met	Actual cost savings were more than 15% -- a much greater savings than the goal of 2%.

Documentation: Supporting documentation is maintained in the Grand Junction, CO, office.