

Fiscal Year 2015 Annual Performance Report



U.S. DEPARTMENT OF
ENERGY

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Introduction

The *FY 2015 DOE Annual Performance Report* contains details of the Department of Energy's (DOE) program performance, showing the historical targets and results from FY 2011 through 2015 for specific goals, measures and methodology documentation. This report fulfills the statutory requirements of the Government Performance and Results Act (GPRA) of 1993 and the GPRA-Modernization Act of 2010 to produce an annual report on past program performance.

DOE Organization

In response to changing needs and an extended energy crisis, the Congress passed the Department of Energy Organization Act in 1977, creating the Department of Energy (DOE). That legislation brought together for the first time, not only most of the government's energy programs, but also science and technology programs and defense responsibilities that included the design, production and certification of nuclear weapon performance. The Department provided the framework for a comprehensive and balanced national energy plan by coordinating and administering the energy functions of the federal government. The Department undertook responsibility for long-term, high-risk research and development of energy technology, federal power marketing, some energy conservation activities, the nuclear weapons programs, some energy regulatory programs and a central energy data collection and analysis program.

Three Under Secretaries manage the core functions that carry out the DOE mission with significant cross-cutting work spanning across the enterprise. The DOE enterprise is comprised of approximately 15,000 federal employees and over 90,000 management and operating contractors and other contractor employees at the Department's headquarters in Washington, D.C., and at 85 field locations. DOE operates a nationwide system of 17 national laboratories that provides world-class scientific, technological, and engineering capabilities, including the operation of national scientific user facilities used by over 29,000 researchers from academia, federal laboratories, and industry. The range, scale, and excellence of science and technology at the DOE laboratories provide strategic assets to accomplish DOE missions, respond to unforeseen domestic and international emergencies, and provide technical capabilities to help shape the global science and technology agenda. The Department's organizational chart is located at <http://energy.gov/about-us/organization-chart>.

Strategic Framework

The FY 2015 performance reporting is based on the 2014-2018 DOE Strategic Plan, which serves as a blueprint for enhancing U.S. security and economic growth through transformative science, technology innovation, and market solutions to meet our energy, nuclear security, and environmental challenges. The plan is available at <http://www.energy.gov/downloads/2014-2018-strategic-plan>.

This report is organized by the following three strategic goals:

1. **Science and Energy** - Advance foundational science, innovative energy technologies, and inform data driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with emphasis on implementation of the President's Climate Action Plan to mitigate the risks of and enhance resilience against climate change.
2. **Nuclear Security** - Strengthen national security by maintaining the nuclear stockpile and modernizing nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities.
3. **Management and Performance** - Position the Department of Energy to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support capabilities to pursue departmental missions.

Agency Priority Goals

The GPRA Modernization Act of 2010 established a process for agencies to focus on a limited number of near-term agency priority goals. The table below summarizes the progress on DOE's agency priority goals for FY 2015. See the tables at the back of this report for more detailed information on the performance measures.

Program/ Goal Leader	Goal Statement	Performance Measure	FY 2015 Target	FY 2015 Result
Nuclear Weapons Lt. Gen. Frank Klotz Dr. Donald Cook Philip Calbos	Maintain and modernize the U.S. nuclear weapons stockpile and dismantle excess nuclear weapons to meet the national security requirements, as assigned by the President, through the Nuclear Posture Review (NPR). In support of this goal, DOE will: <ul style="list-style-type: none"> ➤ Each year through FY 2015 and into the future, maintain 100% of the war heads in the stockpile as safe, secure, reliable, and available to the President for deployment. ➤ Conduct activities necessary to complete planned W76-1 production in FY 2019 and achieve the first B61-12 production unit in FY 2020, as reported in the FY 2013 Selected Acquisition Reports. 	Annual percentage of the stockpile that is safe, secure, reliable, and available	100%	Met – 100% of stockpile is safe, secure, reliable, and available
		Completion of the dismantlement of all weapons systems in excess to stockpile requirements per approved annual schedule published in the Production and Planning Directive, Program Control Documents, and Requirements and Planning Document annual documentation	100%	Not Met – 66% of annual planned dismantlements completed; adverse weather, safety, management, Pantex Metal Trades Council strike, and authorization reviews all delayed scheduled dismantlement activities; expect to meet 2022 goal
		Percentage of steady state W76-1 Life Extension Program planned builds equal to the percentage of allocated funding as represented in the annual Selected Acquisition Report	100%	Not Met – 85% of planned activities completed; shortfall resulted from Pantex Metal Trades Council strike; However all Naval deliverables were met, plan to recover shortfall in FY 2016
Non-proliferation Lt. Gen. Frank Klotz Anne Harrington Art Atkins	Continue to make progress toward securing the most vulnerable nuclear materials worldwide. In support of this goal, DOE will: <ul style="list-style-type: none"> ➤ Remove or confirm disposition of an additional 315 kilograms of highly enriched uranium and plutonium, for a cumulative total of 5,332 kilograms by the end of FY 2015. 	Cumulative number of kilograms of vulnerable nuclear material (highly enriched uranium and plutonium) removed or disposed	5,332 kilograms	Met – 5,576 kilograms of highly enriched uranium and plutonium removed (315 kilograms for FY 2014-15)

Climate Action Plan Dr. Franklin Orr Mike Knotek Kathleen Hogan Mark McCall Dong Kim	Implement elements of the Climate Action Plan, including: ➤ Supporting the goal of reducing cumulative carbon pollution by 3 billion metric tons by 2030 through standards set since 2009 and promulgating new standards for consumer products and industrial equipment by the end of calendar year 2016. ➤ Providing up to \$8 billion in loan guarantees for advanced fossil energy technologies that reduce greenhouse gas emissions by the end of FY 2017.	Promulgating new standards for consumer products and industrial equipment	236 million metric tons of CO ₂ (equivalent) projected carbon reduction through 2030 associated with published standards final rules	Not Met – 100 MMT of CO ₂ (equivalent) projected carbon reduction associated with FY15 published standards final rules
		Loan guarantees for advanced fossil energy technologies	Complete application review process	Ongoing – FY15 target met: 5 rounds of Part I of application review process complete, and 6 rounds of Part II complete. The Loan Programs Office continues to process and evaluate loan guarantee applications for advanced fossil projects and anticipates issuing conditional commitments for advanced fossil loans by the end of FY17.
Quadrennial Energy Review (QER) Melanie Kenderdine Jonathan Pershing	Enhance desirable characteristics and diminish vulnerabilities of the U.S. energy infrastructure to meet goals of economic competitiveness, national security, and environmental responsibility. In support of this goal, DOE will: ➤ Support the first installment of the QER through early FY 2015 and begin implementation of relevant recommendations within DOE's existing authorities.	Support first installment of QER and begin implementation of recommendations	Support and implement QER	Met – Released the Accelerate Energy Productivity by 2030 Roadmap; began to implement recommendations in the QER regarding energy transmission, storage, and distribution
Science	Support and conduct basic research to deliver scientific breakthroughs and extend our knowledge of the natural world by capitalizing on the capabilities available at	Prioritization of Science user facilities	Prioritize user facilities in budget submission	Met – FY 2016 President's Budget submission includes funding for Science user

Dr. Franklin Orr Mike Knotek Pat Dehmer	the national laboratories, and through partnerships with universities and industry. In support of this goal, DOE will:			facilities based on prioritization listing
	<ul style="list-style-type: none"> ➤ Incorporate Science user facility prioritization into program planning efforts. ➤ Identify programmatic drivers and technical requirements in coordination with other Departmental mission areas to inform future development of high performance computing capabilities and in anticipation of capable exascale systems. 	Identification of programmatic drivers and technical requirements	Deliver conceptual design document	Met – Preliminary conceptual design document presented to the DOE Secretary
Management David Klaus Paul Bosco Michael Johnson	Increase the focus on efficient and effective management across the DOE enterprise and improve performance in the areas of environmental cleanup, construction project management, and cybersecurity. In support of this goal, DOE will:	Liquid Waste Tanks Closed	15 tanks	Not Met – 14 tanks were closed; expect to close final tank at Savannah River in first quarter of FY 2016
	<ul style="list-style-type: none"> ➤ Retrieve tank waste, close tanks, and dispose of transuranic waste within cost and schedule through FY 2015. ➤ On a 3-year rolling basis, complete at least 90% of departmental projects 	Transuranic Waste Dispositioned	102,591 cubic meters (cumulative)	Not Met – 102,026 cubic meters (cumulative) of combined remote-handled and contact-handled transuranic waste were disposed or re-characterized as low-level or mixed low-level waste

	<p>baselined since the start of FY 2008 within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2 through FY 2015.</p> <p>➤ Achieve full operational capability of the Joint Cybersecurity Coordination Center (JC3), including classified operations, by the end of FY 2015.</p>	On a 3-year rolling basis, the percentage of departmental projects baselined since the start of FY 2008 that were completed within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2.	90%	Not Met – 78% of projects completed within scope and cost baseline
		Operational capability of the Joint Cybersecurity Coordination Center (JC3), including TS-SCI operations	Full operational capability	Met – DOE achieved full operational capability of the Joint Cybersecurity Coordination Center, including Top-Secret/Special Compartmented Information operations
Labs David Klaus	<p>Restructure the relationship and interactions between the Department and the national laboratories and sites to ensure the continued status of the national laboratories as world-class research institutions best able to achieve DOE's mission, maximize the impact of federal R&D investment in the laboratories, accelerate the transfer of technology into the private and government sectors, and better respond to opportunities and challenges. In support of this goal, DOE will:</p> <p>➤ Establish the National Laboratory Policy Council to address high-level policy challenges and develop initiatives to build and focus the laboratory system on critical economic, research and national security priorities.</p> <p>➤ Establish the National Laboratory Operations Board to address operational</p>	Establishment of the National Laboratory Policy Council	Establish Lab Council	Met – Laboratory Policy Council created and met four times in FY 2015
		Establishment of the National Laboratory Operations Board	Establish Lab Board	Met – Laboratory Operations Board created and met 11 times in FY 2015. Met to discuss key Departmental operational and performance matters; working groups held additional meetings during this period. The LOB led a laboratory-wide assessment of the condition of existing infrastructure throughout the laboratory complex which assessed how well each existing and planned real property asset at the National Laboratories meets the mission and core capability.

	<p>and administrative issues and enhance the effectiveness and efficiency of DOE's management of the national laboratories.</p> <p>➤ Improve stewardship of national assets across the national laboratories and DOE operating sites to assure that DOE physical plants and their operating practices comply with DOE Directives and achieve Administration priority initiatives by end of FY 2015.</p>	Improvement of stewardship of national assets across the national laboratories and DOE operating sites	Improve stewardship of national assets	<p>Met – Completed infrastructure and excess facilities assessments of how well each existing and planned real property asset at the National Labs meets the mission and core capability</p>
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Cross-Agency Priority Goals

The Administration identified 15 cross-agency priority (CAP) goals in the FY 2015 President's Budget. The implementation of these goals was led by White House offices, the Office of Management and Budget, and interagency councils. Action plans and FY 2015 results for each cross-agency priority goal can be found on the interagency performance management website at <http://www.performance.gov>.

The Office of Science and Technology Policy and DOE are the leads for the "Economic Growth: Lab-to-Market" goal:

Increase the economic impact of federally-funded research and development by accelerating and improving the transfer of new technologies from the laboratory to the commercial marketplace.

The following actions are being taken to accelerate and improve the transfer of new technologies from the laboratory to the commercial marketplace:

- Optimizing the management, discoverability, and ease-of-license of the 100,000+ federally funded patents;
- Increasing the utilization of federally-funded research facilities by entrepreneurs and innovators;
- Ensuring that relevant federal institutions and employees are appropriately incentivized to prioritize R&D commercialization;
- Identifying steps to develop human capital with experience in technology transfer, including by expanding opportunities for entrepreneurship education; and
- Maximizing the economic impact of the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

Management Review

The Department is meeting the GPRA-Modernization Act requirements for quarterly data driven executive review of Agency Priority Goals through a meeting within the Department known as the Business Quarterly Review (BQR). This review focuses on current performance and execution, providing appropriate data to support corporate level management decision making. The BQR is structured to evaluate progress in implementing the Department's Strategic Plan. The three Under Secretaries each have primary responsibility in implementing one of the three strategic goals, an underlying set of program goals (including priority goals), and associated key performance measures. The Performance Improvement Officer collects quarterly milestones and stewards data-driven reviews for all priority goals and program performance measures.

The quarterly BQR cycle occurs in tandem with the longer term, annual budget process, and focuses on key priorities and strategy, resource deliberations, and budget construction. The BQR is chaired by the Deputy Secretary, who serves as the Chief Operating Officer. The main participants are the Under Secretaries, Chief Human Capital Officer, Performance Improvement Officer, and the Agency Priority Goal leaders. The meetings and briefing materials are prepared by the Performance Improvement Officer and Budget Director.

FY 2014 Unmet Performance Goals

The following table displays the FY 2015 status of program performance goals that were not met in FY 2014 and explains actions to bring the activity back on track or an explanation of why the measure was discontinued.

Program	FY 2014 Performance Goal	FY 2015 Performance Status
NNSA Weapons Activities / Inertial Confinement Fusion Ignition and High Yield	Advanced Ignition Demonstration – Cumulative percentage of progress toward the validation of a concept that meets the requirements for weapons science applications and contributes to energy science and national security FY 2014 Target: 30 Result: 0	NNSA replaced two ICF program measures, Advanced Ignition Demonstration and Application of Ignition, with a new single measure, High Energy Density Physics Research. The new Measure reflects the recent rebalancing of the program to support both ignition and non-ignition SSP efforts and provides a better determination of relevant mission accomplishments for the ICF program.
	Application of Ignition – Cumulative percentage of progress in providing data required to support the predictive capability framework burn boost initiative in FY 2018 FY 2014 Target: 35 Result: 0	Cumulative percentage of progress towards completion of the high energy density physics research needed to support the nuclear weapons program as embodied in the Predictive Capability Framework (PCF). FY15 Target: 10% completion FY15 Result: 10% - The annual target was met. All major ICF facilities have completed, or exceeded, their respective planned number of effective shots.
NNSA Defense Nuclear Nonproliferation/ International Material Protection and Cooperation	MPC&A Buildings Upgrades – Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades FY 2014 Target: 229 Result: 218	Met FY 2015 target. FY 2015 Target: 221 Result: 221 In December 2014, Russian partner Rosatom told the U.S. that the scope of Material Protection, Control, and Accounting Cooperation (MPC&A) would be decreased, and that the remaining 8 buildings originally identified for joint MPC&A upgrades would be completed without U.S. assistance. Thus, 221 is the final number of buildings. Met 221 buildings (changed from 229). The remaining 8 buildings will not be completed due to Russia's decision to reduce the scope of MPC&A cooperation.

	<p>Second Line of Defense Sustainability – Cumulative number of Second Line of Defense fixed sites and Mobile Detection System deployments that are being indigenously sustained</p> <p>FY 2014 Target: 431 Result: 412</p>	<p>FY 2015 Target: 490 Result: 488</p> <p>NSAA missed the annual target because of on-going political instability in Lebanon. This instability prevented the scheduled transition of some sites to indigenous sustainment. This work remains a high priority and DOE/NNSA will keep working towards the transition of the remaining 2 detection systems to partner countries. Continued political instability in Lebanon prevented the scheduled transition of some sites to indigenous sustainment. NSDD expects these countries to take full responsibility for these sites in the next few years when internal challenges have been overcome.</p>
<p>NNSA</p> <p>Defense Nuclear Nonproliferation/ Fissile Materials Disposition</p>	<p>U.S. Plutonium Disposition (H-Canyon) – Cumulative kilograms of plutonium converted to oxide at Savannah River H-Canyon</p> <p>FY 2014 Target: 180 Result: 1</p>	<p>FY 2015 Target: 100 Result: 1.8</p> <p>Through the end of the 4th quarter, SRNS produced ~9.6 kg of plutonium as oxide in HB-Line, with 1.8 kg meeting all MOX physical, chemical, and isotopic specifications. The difference is caused by the failure to meet moisture content specifications in the fuel as well as a criticality safety control violation in the production process. Due to extended effort to respond to a February criticality safety control violation, HB-Line was not able to achieve consistent plutonium oxide production operations as planned in FY 2015. During 4Q, HB-Line met their resumption schedule following the February incident, operating to produce a small amount additional Pu oxide. However, operations were once again paused following an August 2015 Technical Safety Requirement violation relative to criticality safety controls and procedural violations in HB-Line. SRNS is taking a comprehensive approach to addressing the incident that implements methodical action steps with senior management direct oversight. Resumption date is unknown at this time.</p>

	U.S. Plutonium Disposition (LANL) – Cumulative kilograms of plutonium metal converted to oxide at Los Alamos National Laboratory FY 2014 Target: 692 Result: 617	FY 2015 Target: 792 Result: 667 NNSA missed the plutonium disposition target of 792 kg due to an extended shutdown of operations of the operating facility (PF-4). As of September 30, 2015, 50 kg of plutonium oxide were accepted at LANL, with a resulting cumulative total of 667 kg. The operational pause is due to conduct of operations and criticality safety concerns in PF-4 which impacted the ability to achieve this metric in FY 2015 and will continue to do so in FY 2016. Readiness activities at LANL are ongoing and will support resumption of processes that support oxide production during FY 2016.
EERE Advanced Manufacturing	Superior Energy Performance – Increase number of manufacturing facilities certified in Superior Energy Performance by ANSI accredited bodies (cumulative number certified since the beginning of FY 2011) FY 2014 Target: 40 Result: 22	FY 2015 Target: N/A Measure no longer active in FY15 – FY14 Results remain Not Met
EERE Federal Energy Management Program	Federal Energy Management Program Contract – Reduce life-cycle energy consumption of federal facilities through increased performance contracting and technical assistance (thousand Btu life cycle energy savings) FY 2014 Target: 57 thousand Btu savings Result: 41.1 thousand Btu savings	FY 2015 Target: \$750 Million federal investment in Facilities Energy Conservation Measures Government-Wide Result: \$592 Million FY 2015 target not met.
Nuclear Energy Nuclear Infrastructure	Facility Availability (Idaho Facilities Management Program) – Enable nuclear research and development activities by providing operational facilities and capabilities, as measured by availability percentages FY 2014 Target: ≥ 80 Result: 77	FY 2015 Target: ≥ 80 Result: 77 FY 2015 target not met. Major equipment issues have affected the ability of the reactor to meet its schedule and have negatively impacted research activities, which rely on irradiation in ATR. This highlights the need for ATR to accelerate the maintenance and/or refurbishment of ATR systems and equipment, in order to improve equipment reliability and increase confidence in the reactor's ability to meet its programmatic commitments to its customers in a timely and cost effective manner.

Environmental Management Tank Waste and Nuclear Materials	Depleted Uranium and Uranium (DU&U) – Number of metric tons of DU&U packaged in a form suitable for disposition FY 2014 Target: 68,730 Result: 68,624	FY 2015 Target: 93,624 Result: 79,232 The EM program packaged for disposition a cumulative total of 79,232 metric tons of depleted and other uranium, 14,292 metric tons short of its target. The EM Program will evaluate its targets for FY 2016 to ensure the most safe and efficient operations of the Uranium Hexafluoride Conversion Facilities at both the Portsmouth and Paducah sites.
	Liquid Waste – Thousands of gallons eliminated FY 2014 Target: 7,343 Result: 6,592	FY 2015 Target: 7,592 Result: 6,862 Not Met At the end of FY 2015 the EM program eliminated a cumulative total of 6,862 thousands of gallon of liquid waste. The EM Program will adjust its FY 2016 target for this metric to reflect planned activities.
Environmental Management Waste Management	Legacy and Newly Generated Low-Level Waste and Mixed Low-Level Waste – Cumulative cubic meters disposed FY 2014 Target: 1,298,854 Result: 1,292,571	FY 2015 Target: 1,305,096 Result: 1,315,093 At the end of the fourth quarter of FY 2015, the EM program disposed of a cumulative total of 1,315,093 cubic meters of legacy and newly generated low-level and mixed low-level waste, 9,997 cubic meters above its target for FY 2015.
	TRU Waste – Disposition of a cumulative total of cubic meters of transuranic waste consisting of Remote Handled TRU and Contact Handled TRU FY 2014 Target: 102,591 Result: 99,179	FY 2015 Target: Not Met At the end of the fourth quarter of FY 2015, the EM program dispositioned a cumulative total of 102,026 cubic meters of combined Remote Handled and Contact Handled Transuranic Waste which included TRU waste that was characterized and disposed as Low Level Waste or Mixed Low Level Waste. Due to the suspension of WIPP operations and the ongoing recovery efforts, targets for the corporate performance metric, "Transuranic Waste Dispositioned," cannot be provided at this time. Efforts continue at TRU sites to process and characterize transuranic waste activities. Updated performance metric targets will be reported in the future.

	<p>Release Sites – Complete remediation work at a cumulative total of release sites</p> <p>FY 2014 Target: 8,035 Result: 7,945</p>	<p>FY 2015 Target: 8,201 Result: 8,027 Not Met</p> <p>The EM program adjusted its targets for Release Sites completed in FY 2015 to a cumulative target of 8,201 release sites, which included the unmet goals in FY 2014. At the end of FY 2015 the EM Program completed a cumulative total of 8,027 release sites.</p>
Chief Information Officer	<p>Continuous Monitoring – Implement automated Continuous Monitoring of security controls to provide the Department with higher cybersecurity protection (percentage)</p> <p>FY 2014 Target: 95 Result: 94</p>	<p>FY 2015 Target: 63 Result: 64</p> <p>The Continuous Monitoring performance measure for all management capabilities combined exceeded the target goal of 63%.</p>
	<p>Remote Access 2 Factor PIV Access – Manage and implement PIV access to provide the Department with higher cybersecurity protection (percentage)</p> <p>FY 2014 Target: 70 Result: 25</p>	<p>FY 2015 Target: 26 Result: 23</p> <p>The Strong Authentication (PIV/ICAM) performance measure which includes Privileged and Unprivileged Network User capabilities did not meet their target goals throughout the year except for Q3 FY15.</p>
	<p>Trusted Internet Connection and Managed Trusted Internet Protocol Service – Manage and implement TIC and MTIPS consolidation in order to provide the Department with higher cybersecurity protection (percentage)</p> <p>FY 2014 Target: 95 Result: 72</p>	<p>FY 2015 Target: N/A</p> <p>Based on guidance from DHS, the Trusted Internet Connection (TIC)/MTIPS measure is no longer considered a CAP Goal for FY 2015. As a result, these measures are no longer applicable and should be inactivated.</p>
Project Management	<p>Project Success – On a 3-year rolling basis, the percentage of departmental projects baselined since the start of FY 2008 that were completed within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2</p> <p>FY 2014 Target: 90 Result: 76</p>	<p>FY 2015 Target: 90 Result: 77</p> <p>Actions Taken: To bring the activity back on track, a working group of DOE's most senior project managers produced an in-depth analysis of project management in a report entitled "Improving Project Management" which resulted in a Secretarial policy memorandum, "Improving the Department's Management of Projects" released by the Secretary on December 1, 2014. Based on the report and policy memorandum, and drawing from industry and government best practices, the Department took several steps to supplement ongoing efforts to improve project management, including:</p>

		<p>strengthening the Energy Systems Acquisition Advisory Board (ESAAB), establishing a Project Management Risk Committee (PMRC), and improving the lines of responsibility and the peer review process.</p> <p>In a memorandum dated June 8, 2015, entitled “Project Management Policies and Principles”, the Secretary further enhanced and clarified departmental policy related to areas of project management to include analysis of alternatives, cost estimating, planning and scheduling, and design management, among others.</p> <p>The Secretary further directed that all requirements of DOE Order 413.3B, <i>Program and Project Management for the Acquisition of Capital Assets</i>, were applicable for all capital asset projects having a Total Project Cost (TPC) of \$10 million or greater versus the \$50 million threshold originally specified in the Order, and that a limited update to the Order be immediately undertaken to incorporate all recent Secretarial policy memorandums.</p>
Loan Programs	<p>Generation Capacity of Projects Receiving Loan Guarantees – Annual generation capacity from projects receiving DOE loan guarantees that have achieved commercial operations (gigawatts)</p> <p>FY 2014 Target: ≥ 3.8 Result: 3.2</p>	<p>Exceeded FY 2015 target.</p> <p>FY 15 Target: ≥ 3.8 Result: 3.82</p>

Program Inventory

The following table presents the FY 2015 inventory of DOE programs and shows the relationship between the DOE strategic goals, objectives, and program activities.

Goal	Objective	Program Activity
<p>1. Science and Energy - Advance foundational science, innovative energy technologies, and inform data driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with</p>	<p>Strategic Objective 1 – Advance the goals and objectives in the President’s Climate Action Plan by supporting prudent development, deployment, and efficient use of energy resources that also create new jobs and industries</p>	<p>Advanced Research Projects Agency-Energy</p> <p>Electricity Delivery and Energy Reliability</p> <p>Energy Efficiency and Renewable Energy</p> <p>Energy Information Administration</p> <p>Energy Policy and Systems Analysis</p>

emphasis on implementation of the President's Climate Action Plan to mitigate the risks of and enhance resilience against climate change	Strategic Objective 2 – Support a more economically competitive, environmentally responsible, secure and resilient U.S. energy infrastructure	Fossil Energy Indian Energy Policy and Programs International Affairs Loan Programs Nuclear Energy Power Marketing Administrations Science
	Strategic Objective 3 – Deliver the scientific discoveries and major scientific tools that transform our understanding of nature and strengthen the connection between advances in fundamental science and technology innovation	
Goal	Objective	Program Activity
2. Nuclear Security: Strengthen national security by maintaining the nuclear stockpile and modernizing nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities	Strategic Objective 4 – Maintain the safety, security and effectiveness of the nation's nuclear deterrent without nuclear testing	National Nuclear Security Administration Intelligence and Counterintelligence International Affairs
	Strategic Objective 5 – Strengthen key science, technology, and engineering capabilities and modernize the national security infrastructure	
	Strategic Objective 6 – Reduce global nuclear security threats	
	Strategic Objective 7 – Provide safe and effective integrated nuclear propulsion systems for the U.S. Navy	
Goal	Objective	Program Activity
3. Management and Performance: Position the Department of Energy to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support	Strategic Objective 8 – Continue cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities	Environmental Management Legacy Management Chief Financial Officer Chief Human Capital Officer Chief Information Officer Congressional and Intergovernmental Affairs
	Strategic Objective 9 – Manage assets in a sustainable manner that supports the DOE mission	

capabilities to pursue departmental missions	Strategic Objective 10 – Effectively manage projects, financial assistance agreements, contracts, and contractor performance	Economic Impact and Diversity General Counsel Environment, Health, Safety and Security Enterprise Assessments Hearings and Appeals Inspector General Management Public Affairs
	Strategic Objective 11 – Operate the DOE enterprise safely, securely, and efficiently	
	Strategic Objective 12 – Attract, manage, train, and retain the best federal workforce to meet future mission needs	

Strategic Objectives Summary of Progress

The following table presents the FY 2014-15 summary of progress toward meeting DOE strategic plan objectives by DOE programs. The objectives are based on the [2014-2018 DOE Strategic Plan](#).

Strategic Goal/Objective	FY 2014-15 Progress
Goal 1: Science and Energy	
1. Advance the goals and objectives in the President's Climate Action Plan by supporting prudent development, deployment, and efficient use of energy resources that also create new jobs and industries	<p><u>Energy Efficiency</u> In Calendar Year 2015, DOE promulgated 12 new standards for consumer products and industrial equipment, reducing cumulative carbon pollution by 100 Million metric tons in support of the Climate Action Plan goal to reduce emission by 3 billion metric tons by 2030 through standards set since 2009.</p> <p><u>Loan Programs</u> Issued conditional commitments for over \$8.5 billion in loan guarantees under Title XVII and ATVM for Vogtle, Cape Wind and Alcoa.</p> <p><u>Advanced Research Projects Agency–Energy (ARPA-E)</u> At least 30 ARPA-E project teams have formed new companies to advance their transformative energy technologies and more than 37 ARPA-E projects have partnered with other government agencies for further development.</p> <p>Consortium for the Advanced Simulation of Light Water Reactors (CASL) was established in 2010 to develop advanced computing capabilities that serve as a virtual version of existing, operating nuclear reactors. CASL has, with industry partners, created a virtual model of nuclear reactors and created innovative methods for the interoperation of software that simulates many physical behaviors found in reactors, improving the accuracy of simulation results.</p>

<p>2. Support a more economically competitive, environmentally responsible, secure and resilient U.S. energy infrastructure</p>	<p><u>Electricity Delivery and Reliability</u></p> <p>Energy storage, cybersecurity, and energy impact analyses goals have been met. Key milestones include the deployment of analytical methodology to forecast impacts from hurricanes and demonstrating a tool that designs-in enhanced communications security between control centers. Supported development and testing of multiple technologies that advance resilience and responded to five severe weather events in FY 2014, providing information to decision-makers using Eagle-I. Also provided support to states assessing impacts of climate change and tools for improving the reliability of the grid.</p> <p><u>Energy Information Administration</u></p> <p>Several projects underway that will fill data gaps and improve public understanding of key factors impacting the nation's energy infrastructure. These include:</p> <ul style="list-style-type: none"> • Playing a significant role in the trilateral U.S./Canada/Mexico initiative to exchange views on and projections for cross-border flows of energy; compare respective import and export information on energy flows to validate data and improve data quality; share geographic information system data files reflecting energy infrastructure; and develop a cross-reference for terminology commonly used in the energy sector. • Developing first-ever hourly collection of electricity load data from the nation's balancing authorities that will provide timely insights into grid functionality. • Implementing monthly collection of oil and natural gas production data, including data on API gravity as a measure of oil quality to enable better understanding of market fundamentals related to increased domestic production. • Updating and extending models to address new developments in the electricity sector, including effects of expanded energy efficiency programs and the regulation of carbon dioxide emissions. • Continuing to expand the State Energy Portal, mapping system, and state outreach to improve information accessibility to key stakeholders. <p><u>Fossil Energy – Strategic Petroleum Reserve</u></p> <p>Conducted a successful test sale in FY2014, providing lessons learned that will improve future drawdowns. Phases of the site oil tank repair and roof conversion on Bryan Mound Tank 2 (BMT-2) will continue until the beginning of FY2018. In addition, oil tank repair and roof conversion is now required for Bryan Mound Tank 4 (BMT-4) which has a scheduled completion that is subject to availability of funding. The restoration of these tanks are an integral part of maintaining a drawdown rate of 4.4 million barrels a day.</p>
<p>3. Deliver the scientific discoveries and major scientific tools that transform our understanding of nature and strengthen the</p>	<p><u>Science</u></p> <ul style="list-style-type: none"> • Incorporated science user facility prioritization into program planning efforts.

<p>connection between advances in fundamental science and technology innovation</p>	<ul style="list-style-type: none"> Identified programmatic drivers and technical requirements in coordination with other Departmental mission areas to inform future development of high performance computing capabilities and in anticipation of capable exascale systems. <p><u>Discovery-Focused Research</u></p> <ul style="list-style-type: none"> Awarded \$100 million under the FastForward 2 program to develop critical technologies needed to deliver computing capabilities that will enable affordable and energy-efficient advanced extreme scale computing research and development for the next decade. Awarded \$100 million to fund 32 Energy Frontier Research Centers Initiated the first set of Computational Materials Sciences awards in support of the Materials Genome Initiative. Announced breakthroughs in bioenergy sciences, including the identification of new genes involved in plant cell wall biosynthesis, development of new engineered plants with “zip-lignins” incorporated into cell wall structural components that produce plants far easier to break down to lignocellulosic sugars and development of engineered bacteria that can tolerate and grow in presence of ionic liquids (used to breakdown biomass), thereby improving overall biofuel production costs. NOvA (Neutrinos at Main Injector (NuMI) Off-axis Neutrino Appearance), currently the longest baseline and highest intensity neutrino experiment in the world, produced its first results. The Relativistic Heavy Ion Collider set new luminosity records in FY 2014; the higher the luminosity, the higher the probability that rare nuclear events will occur frequently enough to enable new discoveries about the state of matter that existed under the extreme conditions that occurred soon after the Big Bang. The DOE Isotope Program initiated a tri-laboratory research effort to demonstrate the feasibility of large scale production of Ac-225, a high priority alpha-emitter for cancer therapy. <p><u>Scientific User Facilities</u></p> <ul style="list-style-type: none"> Approximately 31,000 researchers from universities, national laboratories, industry, and international partners have used the Office of Science national user facilities in FY 2014 and FY 2015. Final funding/successful completion of many construction and major items of equipment projects during FY 2014-2015, including: <ul style="list-style-type: none"> National Synchrotron Light Source-II (NSLS-II, BES) NUMI Off-axis Neutrino Appearance (NOvA, HEP) The Energy Sciences Building (ESB, SLI) SNS Instruments - Next Generation-II (SING-II, BES)
<p>Goal 2: Nuclear Security</p>	

<p>4. Maintain the safety, security and effectiveness of the nation's nuclear deterrent without nuclear testing</p>	<p><u>National Nuclear Security Administration</u></p> <ul style="list-style-type: none"> • Maintained 100% of the warheads in the stockpile as safe, secure, reliable, and available. • Conducted activities necessary to complete planned W76-1 production in FY 2019 and achieve the first B61-12 production unit in FY 2020. <p><u>Defense Nuclear Security</u></p> <p>Developed a "Nuclear Security Roadmap" leading to near- and long-term strategic planning across the eight NNSA sites. The Roadmap was provided to GAO and Congress. This Roadmap includes strategies for completion/expansion of the above "achievements" and establishes additional business processes to promote a secure NNSA enterprise.</p> <p><u>Advanced Simulation and Computing</u></p> <ul style="list-style-type: none"> • FY 2015 - Provided models for complex hydrodynamic processes that are sufficiently predictive to enable design and assessment of various stockpile options. • FY 2016 - Refined models for complex hydrodynamic processes that are sufficiently predictive to enable design and assessment of various stockpile options.
<p>5. Strengthen key science, technology, and engineering capabilities and modernize the national security infrastructure</p>	<p><u>Advanced Scientific Computing</u></p> <p>Initiated calculations in support of improving boost models by September 2017.</p> <p><u>Inertial Confinement Fusion</u></p> <ul style="list-style-type: none"> • Drafting the 10-year HED Strategic Plan, the foundation of the multi-year planning efforts of the Inertial Confinement Fusion and High Energy Density research. • Working on completion of the initial set of experiments defined in the 10-year HED Strategic Plan by September 2018. <p><u>Weapons</u></p> <ul style="list-style-type: none"> • Implementing Phase 1 (development, initiation, and small-scale pilot) of the Asset Management Program (AMP), a systems-engineering approach to facilities investment. The AMP is aimed at addressing enterprise-wide modernization needs and achieving economies-of-scale efficiencies in cost and schedule. Heating, Ventilation, Air Conditioning systems have been identified as the top priority to be deployed by the AMP. • An additional 20 recapitalization projects are scheduled to be complete in FY 2017. • FY 2016 Congressional Budget Request includes a new performance measure to demonstrate improvement in infrastructure modernization.

6. Reduce global nuclear security threats	<p><u>Global Threat Reduction Initiative</u></p> <p>Goal was to remove or confirm disposition of 5,332 kilograms of highly-enriched uranium and plutonium. Looking into the possibility of accelerating a shipment of highly-enriched uranium from France and confirming the disposition of material in France.</p>
7. Provide safe and effective integrated nuclear propulsion systems for the U.S. Navy	<p><u>Naval Reactors</u></p> <p>Completed A1B reactor plant design for the next-generation aircraft carrier.</p>
Goal 3: Management and Performance	
8. Continue cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities	<p><u>Environmental Management</u></p> <p>Goal is to retrieve tank waste, close tanks, and dispose of transuranic waste within cost and schedule – got behind schedule and did not meet goals.</p>
9. Manage assets in a sustainable manner that supports the DOE mission	<p><u>Legacy Site Responsibility</u></p> <p>Transfer of the five remaining sites has been postponed to FY 2017 or later due to delays in the cleanup activities of the U.S. Army Corps of Engineers and the private licensees charged with the cleanup of former uranium mills.</p> <p><u>Sustainability</u></p> <p>An emphasis for DOE is to improve performance in improving buildings to address sustainability. Currently, only 4.7% of DOE buildings are in compliance with the Guiding Principles for High Performance Sustainable Buildings, which is the only sustainability goal on which DOE lags. DOE facilities consist of unique scientific laboratories, accelerators, light sources, supercomputers, data centers, industrial facilities, and traditional office space environments. DOE is challenged with integrating sustainability into aging infrastructure with energy intensive processes or designating more buildings for disposition. DOE is working with all sites to implement best practices and evaluate performance contracting opportunities. Sites are working independently to install lighting upgrades, high-efficiency water fixtures, occupancy sensors, metering, and other energy efficiency and sustainable enhancements.</p>
10. Effectively manage projects, financial assistance agreements, contracts, and contractor performance	<p><u>Project Management</u></p> <p>Goal was to complete 90% of Departmental projects within the original scope baseline and not to exceed 110% of the cost – did not meet this goal.</p> <p><u>Acquisition Workforce</u></p> <p>The DOE goals for managing and strengthening the acquisition workforce through FY 2015 include plans to strengthen the capacity and capability with current staffing. In addition to continuing previous initiatives. Some specific examples include:</p>

	<ul style="list-style-type: none"> • Leveraging best practices from one organization to the next through knowledge sharing through the EPiC intranet. • Creating the infrastructure to support alternative delivery methodologies and learning how to deliver and determine demand in a virtual structure. Desktop delivery training has proved to be a great way to develop the workforce and deliver training cost effectively. • Participating as members of Procurement Management Reviews at other sites, provides valuable opportunities for the workforce to learn from each other. • Implementing and expanding the utilization of FAITAS as a complete workforce certification and management tool. <p><u>Workforce Development Authority</u> Aligning workforce professional development authority at the appropriate level. Revised workforce professional development order and will be implementing new authorities at lower organizational levels.</p>
<p>11. Operate the DOE enterprise safely, securely, and efficiently</p>	<p><u>National Laboratories</u></p> <ul style="list-style-type: none"> • Achieved full operational capability of the Joint Cybersecurity Coordination Center (JC3), including TS-SCI operations. • Established the Lab Policy Council. • Established the Lab Operations Board. • Improved stewardship of national assets across the national laboratories and DOE operating sites. <p><u>IT Policy and Governance</u> Recently released FITARA legislation was a major priority in FY 2015. The Department ensured that the guidance and requirements prescribed in FITARA are worked on collaboratively with enterprise-wide input with the goal of executing as efficiently as possible.</p> <p><u>Cybersecurity</u></p> <ul style="list-style-type: none"> • Enhancing DOE's reputation as a responsible interagency partner in information sharing and safeguarding. • Continuing to meet and work with DHS and will initiate outreach to the DOE Enterprise with guidance and support to participate in Phase 2 exercises for CDM. • Developed the Incident Management Core Competency Training Module. This course is available to all DOE Cybersecurity and Information Technology professionals through the Online Training Center and the DOE Contractor Training Site. A course in Supply Chain Risk Management for Program Managers is also now available. • Enterprise Supply Chain Risk Management (eSCRM) program will continue to refine its processes and services to reach full operating capability (per CNSS Directive 505) during FY 2016. The eSCRM capability continues to mature and expand, leveraging innovations in supply chain management to

	<p>strengthen and secure the foundations of our acquisition activities and underlying infrastructure.</p> <p><u>Technology and Innovation</u> Completed the following:</p> <ul style="list-style-type: none"> • Version 2 of the primary system requirements; • Representative software application inventories from all six team members; • Evaluation of OneID (NNSA prototype) as a possible model solution; • Hire an experienced, dedicated program manager; • Develop a formal program plan. <p><u>Energy IT Services</u></p> <ul style="list-style-type: none"> • Continuous Monitoring – create a dashboard with Risk Heat Map or similar visualization of risk. • Major Security Events – plan to continue vigilance in identifying and mitigating security events. • Microsoft Office 365 e-mail migrations completed. <p><u>Enterprise Assessments</u> Executed a 2015 assessment schedule, including performance evaluations, for the following areas: cyber security, physical and information security, nuclear safety, environmental safety, worker safety and health, and emergency management. Completed over 80 assessments of DOE enterprise assets and facilities (including NNSA) during 2014. Exceeded the number of completed assessments during 2015.</p>
12. Attract, manage, train, and retain the best federal workforce to meet future mission needs	<p><u>Human Resources (HR)</u> In the process of improving delivery of HR services and consolidating multiple HR offices into consolidated service centers. This effort will continue into FY 2016.</p>

Program Performance Goals

Detailed progress reports on DOE programs' annual performance goals are presented in the pages that follow. The tables are organized by program and sub-program and provide targets and results for FY 2011 through 2015.

Federal Salaries & Expenses

NNSA Federal Salaries & Expenses

The mission of Office of the Administrator is to create a well-managed, inclusive, responsive, and accountable organization through the strategic management of human capital and acquisitions and integration of budget and performance data.

Program	NNSA Federal Salaries & Expenses				
Performance Goal (Measure)	Federal Administrative Costs - Maintain the Federal Salaries and Expenses federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%.				
Fiscal Year	2011	2012	2013	2014	2015
Target	5.9 %	5.9 %	5.9 %	5.9 %	5.9 %
Result	Exceeded - 4.5	Exceeded - 4.1	Exceeded - 4.2	Exceeded - 4.1	Met - 3.9
Endpoint Target	In keeping with OMB and DOE expectations that administrative costs be minimized, 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%.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved 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 percent or less. FY 2015 result is 3.9 percent. This result is important because it demonstrates a prudent use of valuable resources.				
Documentation, Limitations, Methodology, Validation, and Verification	DOE accounting report; Excel spreadsheet with percent calculations				

Weapons Activities

Directed Stockpile Work

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.

Program	Directed Stockpile Work				
Performance Goal (Measure)	Annual Warheads Certification - Annual percentage of warheads in the stockpile that is safe, secure, reliable, and available to the President for deployment.				
Fiscal Year	2011	2012	2013	2014	2015
Target	100 % of stockpile certified	100 % of stockpile certified	100 % of stockpile certified	100 % of stockpile certified	100 % of stockpile certified
Result	Met - 100	Met - 100	Met - 100	Met - 100	Met - 100

Endpoint Target	Annually, maintain 100% of warheads in the stockpile as safe, secure, reliable, and available to the President for deployment.
Commentary on 2015 Results (Action Plan if Not Met)	The target was met. Accomplishments: During the fourth quarter the National Laboratories issued the final Cycle 20 Annual Assessment Reports (AARs) for each weapon system in the stockpile. Additionally, the National Laboratories issued the 2015 Annual Assessment Letters that discusses the current state and health of the stockpile in preparation for the FY 2015 Report on Stockpile Assessments to the President.
Documentation, Limitations, Methodology, Validation, and Verification	1) NNSA National Laboratories published Warhead Annual Assessment Reports/Weapon Reliability Reports; 2) Laboratory Director Annual Assessment Letters; 3) Cycle 20 Execution Plan

Program	Directed Stockpile Work				
Performance Goal (Measure)	Retired Weapons Systems Dismantlement - Complete the dismantlement of all weapons systems in excess to stockpile requirements per approved annual schedule published in the Production and Planning Directive (P&PD), Program Control Documents (PCDs), and Requirements and Planning Document (RPD) "annual" documentation with the goal of balancing dismantlement work by mitigating gaps in future stockpile reductions.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	100 % of annual planned dismantlements	100 % of annual planned dismantlements	100 % of annual planned dismantlements	100 % of annual planned dismantlements
Result		Exceeded - 112	Not Met - 88	Met - 100	Not Met - 66
Endpoint Target	Complete by FY 2021 the dismantlement of all weapons systems retired prior to 2009. Note: The Dismantlement Annual Performance Goal was changed to complete the recommendation against the finding in the GAO Draft Report: GAO-14-206C, Nuclear Weapons: Actions Needed by NNSA to Clarify Dismantlement Performance Goal.				
Commentary on 2015 Results (Action Plan if Not Met)	The target was not met for FY 2015. During 4Q, the Agency made plans to increase dismantlement activities in response to Secretary Kerry's announcement that the President will seek to accelerate dismantlement by 20%. However, NNSA contractors fell behind the target of 100% dismantlements scheduled to be completed in FY 2015. Adverse weather, safety, management, and authorization reviews also delayed scheduled dismantlement activities. Safety reviews required by DOE orders involved responding to unresolved safety questions that arose while NNSA was dismantling several weapons, and safety evaluations of the proposed engineering solutions. In addition, management and authorization reviews were conducted to approve proposed solutions. Solutions included process changes and new tooling. Although Weapons Dismantlement and Disposition (WDD) is behind schedule for 2015, NNSA expects to meet the 2022 commitment. This result is important because it demonstrates NNSA's commitment to the President's vision for reducing nuclear dangers and pursuing the long-term goal of a world without nuclear weapons. As				

	defined by the 2010 Nuclear Posture Review (NPR), this target is a concrete demonstration of meeting our Non-Proliferation Treaty (NPT) Article VI obligation to make progress toward nuclear disarmament. Action Plan: NNSA is evaluating FY 2015 4Q results and re-baselining dismantlement schedules to recover as much of FY 2015 as possible in FY 2016 while retaining the FY 2016 planned schedule.
Documentation, Limitations, Methodology, Validation, and Verification	1) Current DSW Planning and Production Directive (P&PD) (workload planning documentation); 2) Program Control Documents (for individual weapons); 3) Requirements and Planning Document (RPD) DoD/DOE Nuclear Weapons Council (NWC); 4) Nuclear Weapons Dismantlement Program Plan of record; and 5) 2008 Report to Congress on NNSA Nuclear Weapons Dismantlement.

Program	Directed Stockpile Work				
Performance Goal (Measure)	Steady State W-76-1 LEP Production - The percentage of planned builds equal to the percentage of allocated funding as represented in the annual Selected Acquisition Report (SAR).				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	100 % of scheduled unit builds	100 % of scheduled unit builds
Result				Met - 100	Not Met - 85
Endpoint Target	Complete production of the NWC-approved W76-1 LEP production schedule by FY 2019. Note: This performance measure is used to track progress on the Nuclear Weapons agency priority goal.				
Commentary on 2015 Results (Action Plan if Not Met)	The FY 2015 target was not met and the Agency achieved only 85% of the annual target of producing 100% of allocated War Reserve (WR) unit builds of the Nuclear Weapons Council-approved W76-1 Life Extension Program as represented in the annual Selected Acquisition Report (SAR). NNSA successfully recovered behind schedule production deliverables at the end of June 2015 due to Mass Properties testing and safety basis issues. However, the W76-1 LEP did not meet the FY 2015 production baseline due to several production issues, complicated by the Pantex Metal Trades Council strike, which arose after achievement of the production recovery in June 2015. The Agency completed its deliveries of WR units to the Navy through September 2015 in accordance with the negotiated Defense Programs and Navy delivery schedule without impact to the Navy's fleet deployment schedules. This result is important because extending the life of the W76-0, a weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs. Action Plan: NNSA is developing a plan to recover the FY 2015 production shortfall in FY 2016.				
Documentation, Limitations, Methodology, Validation, and Verification	1) W76-1 Selected Acquisition Report(s); 2) Planning and Production Directive (P&PD) current FY revision); 3) W76-01 Program Control Document 2013-C dated 05-02-13; 4) Requirements and Planning Directive (RPD) current revision; 5) Life Extension Program Management Plan dated 01-24-03; 6) W76 LEP NNSA Project Plan (as revised) – provides a summary of the activities and schedules necessary to accomplish the W76-1/Mk4A refurbishment; 7) NNSA memorandum from J.M. Oder, Office of Nuclear Weapon Stockpile, NA-122, to Distribution, "Update to Production and Planning Directive 2011-1," dated February 21, 2012; 8)				

Microsoft Excel Spreadsheet, "Cost Estimating for the W76 LEP 12/29/2011 Rev. 7," dated September 27, 2012; 9) NNSA memorandum from J.M. Oder, Office of Nuclear Weapon Stockpile, NA-122, to Distribution, "Update to W76-1 Production (U)," dated March 12, 2013.

Program	Directed Stockpile Work				
Performance Goal (Measure)	Tritium Production - Cumulative number of Tritium-Producing Burnable Absorber Rods irradiated in Tennessee Valley Authority reactors to provide the capability of producing new tritium to support national security requirements.				
Fiscal Year	2011	2012	2013	2014	2015
Target	1,328 TPBARs	1,872 TPBARs	1,872 TPBARs	2,416 TPBARs	3,120 TPBARs
Result	Met - 1,328	Met - 1,872	Met - 1,872	Met - 2,416	Met - 3,120
Endpoint Target	By the end of FY 2020, complete irradiation of 6,768 Tritium-Producing Burnable Rods (TPBARs) to provide tritium for nuclear weapons. Note: Irradiation of TPBARs is completed every 18 months, or 1.5 years, in approximately October or March. For FY 2016, the irradiation cycle started in October of 2015 and will complete in March 2017. Thus, there is no increase to the number of TPBARs irradiated in FY 2017 and, for the same reason, no increase in FY 2018 or FY 2019. This performance measure was moved from the Readiness Campaign in the FY 2014 appropriation.				
Commentary on 2015 Results (Action Plan if Not Met)	The annual target was met completing the irradiation of 704 Tritium Producing Burnable Absorber Rods (TPBARs) thereby increasing the cumulative quantity of completely irradiated TPBARs to 3,120. These 704 TPBARs started irradiation in March 2014, and completed their 18 month irradiation cycle mid-September 2015. The program also completed the fabrication and delivery of the FY 2016 quantity of TPBARs for irradiation. This result is important because irradiation and extraction of tritium is essential to meeting national security requirements.				
Documentation, Limitations, Methodology, Validation, and Verification	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 site status calls with the Federal Program Manager; End of cycle reports submitted by the Tennessee Valley Authority (TVA); Quarterly Project Reviews (attended by TVA); Milestone Reporting Tool (MRT) status reports.				

Science

The Science Campaign develops our nation's scientific capabilities and experimental infrastructure used to assess the safety, security, reliability, and performance of the nuclear explosives package (NEP) without reliance on further underground testing. The Science Campaign supports this evaluation by developing certification and assessment tools and the experimental platforms to inform, validate, and provide confidence in our essential predictive capabilities. Its science-based approach provides the fundamental knowledge needed to: (1) provide a quantitative measure of confidence in weapons

performance; (2) address and reduce uncertainties in our predictive capabilities; (3) predict the performance of the NEP as components age; (4) inform decisions for Stockpile Stewardship Programs; and (5) exercise readiness capabilities through experiments and assessments.

Program	Science				
Performance Goal (Measure)	Experimentally Validated Physics Models - Cumulative percentage of progress in delivering an experimentally validated physics-based capability to enable assessment of weapon performance with quantified uncertainties, replacing key empirical parameters in the nuclear explosive package.				
Fiscal Year	2011	2012	2013	2014	2015
Target	63 % of progress	68 % of progress	72 % of progress	76 % of progress	80 % of progress
Result	Met - 63	Met - 68	Met - 72	Met - 76	Met - 80
Endpoint Target	By the end of FY 2020, use modern physics models in assessment calculations to replace the major empirical parameters affecting weapon performance. This activity is performed in collaboration with the ICF Campaign.				
Commentary on 2015 Results (Action Plan if Not Met)	The target was met by achieving 80% progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models developed by validation with experiment. Performance Capability Framework (PCF) 4Q accomplishments include: Science Campaign work is complete for the technical foundation for certification of the level 1 pit reuse milestone, a PCF Pegpost and major achievement. Completed high energy density (HED) experiments providing data on the behavior of materials in extreme regimes relevant for stockpile primaries. Three boost experiments were completed last quarter to support the National Boost Initiative. Properties of 50 year old plutonium were measured. Final preparations were made to support the Orpheus experiment to be conducted at Nevada underground facility (U1a). The third planned plutonium experiment on the Z machine at Los Alamos National Laboratory was completed in September. Studies for safety improvements including insensitive high explosives were part of several successful milestones. Energy Balance II is proceeding and had a successful milestone in Q4 along with several other Secondary Assessment Technology experiments. This result is important because it will improve nuclear weapon certification confidence and underpins continued progress expected in FY 2016.				
Documentation, Limitations, Methodology, Validation, and Verification	Predictive Capability Framework, Milestone Reporting Tool, White Paper on Quantification of Margins and Uncertainty Performance Measure				

Engineering

The Engineering Campaign provides the modern tools and capabilities needed to ensure the safety, security, reliability and effectiveness of the United States nuclear weapons stockpile. It provides the fundamental and sustained engineering basis for stockpile certification and assessments that are needed throughout the entire lifecycle of each weapon. The Engineering Campaign funds activities that assess and improve fielded nuclear and non-nuclear engineering components without further underground testing. Additionally, this Campaign increases the ability of the National Nuclear Security Administration (NNSA) to predict the response of weapon components and subsystems to harsh environments and to the effects of aging. In accordance with the 2010 Nuclear Posture Review Report, the Engineering Campaign directly supports “strengthening the science, technology, and engineering

(ST&E) base needed for conducting weapon system LEPs, maturing advanced technologies to increase weapons surety, qualification of weapon components and certifying weapons without nuclear testing, and providing annual stockpile assessments through weapons surveillance.”

Program	Engineering				
Performance Goal (Measure)	Technology Maturation Capabilities - The annual progress towards the maturation of technologies and stockpile assessment capabilities as measured by the number of deliverables in the implementation plans completed.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	21 deliverables	21 deliverables	20 deliverables	22 deliverables
Result		Met - 21	Met - 21	Met - 20	Met - 22
Endpoint Target	Until the last nuclear weapon system in the stockpile is dismantled, NNSA will continue to mature technologies and stockpile assessment capabilities to support Directed Stockpile Work (DSW) nuclear weapons refurbishment and assessment activities.				
Commentary on 2015 Results (Action Plan if Not Met)	The target was met. Achievement was validated by the on time, on budget completion of FY 2015 milestones and deliverables. Significant accomplishments for 4Q includes Multi-Point Safety (MPS) concepts development completion at LANL/LLNL/SNL; Engineering maturation of highest priority surety component to TRL 3+; SRNL developed all resource loaded schedules for Advanced Hydrogen Tritium Thermal Cycling Absorption Process (HT-TCAP), Tritium Water Processing, Reservoir Unloading Purification System (RUPS), Hydrogen Processing Demonstration Facility, and Advanced Storage. These results are important because they ensure the tools and component technologies required to support the safety, security, reliability, and performance of the current and future US nuclear stockpile are available when needed.				
Documentation, Limitations, Methodology, Validation, and Verification	Milestones and a table of deliverables supporting the performance measures are documented in the Program Implementation Plan (PIP). Weekly and monthly site status calls with the Federal Program Managers are documented. Milestone Reporting Tool (MRT) status reports also document progress performance on a quarterly basis. In addition, bi-annual and annual accomplishments are provided by the sites to Federal Program Manager in formal program reviews. Federal Program Manager and staff confirm capabilities completion during site field visits and Program Reviews.				

Inertial Confinement Fusion Ignition and High Yield

The Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign supports the U.S. Department of Energy's (DOE) national security goals by providing scientific understanding and experimental capabilities in high-energy-density (HED) physics for the validation of codes and models necessary to maintain a safe, secure, and effective nuclear weapons stockpile without underground testing.

Program	Inertial Confinement Fusion Ignition and High Yield
Performance Goal (Measure)	High Energy Density Physics Research - Cumulative percentage of progress towards completion of the high energy density physics research needed to support the nuclear weapons program as embodied in the Predictive Capability Framework (PCF).

Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	10 % of progress (cumulative)
Result					Met - 10
Endpoint Target	By FY 2024, complete the ICF Program activities needed to complete the PCF pegposts, including demonstrating advanced burning plasma concepts that improve predictive capabilities and the application of physics for achieving ignition. These activities are performed in collaboration with the Science program within the Office of Research and Development.				
Commentary on 2015 Results (Action Plan if Not Met)	The annual target was met. All major ICF facilities have completed, or exceeded, their respective planned number of effective shots. During September 2015, SNL successfully completed four complex, fully integrated, MagLIF experiments on Z, bringing the total of fully integrated shots for FY 2015 to 12. The MagLIF shot series successfully isolated the impact of liner height, window thickness, and target end-cap materials on contaminant mix in the fuel. These results are important for they contribute to a better understanding of the complex physics associated with the ignition domain.				
Documentation, Limitations, Methodology, Validation, and Verification	1. Program Implementation Plans for ICF Program (NA-112) and Research and Development Program (Science, NA-113) document annually the program of work to be accomplished in support of the PCF, including Program Milestones. 2. Milestone Reporting Tool (MRT) reports: Progress toward and completion of annual milestones as documented and reported quarterly in the Milestone Reporting Tool (MRT) System. 3. Quarterly Reports by the HED Council and the ICF Council on the execution of the planned HED program of work on the major HED facilities. The planned program of work is derived from the PCF. The Councils establish their experimental campaign plans in support of the key performance indicators above, and are further supported through the milestones documented in the ICF and Science Program Implementation Plans.				

Program	Inertial Confinement Fusion Ignition and High Yield				
Performance Goal (Measure)	Key Extreme Experiments - Cumulative percentage of progress towards achievement of key extreme experimental condition of matter needed for predictive capability for nuclear weapons performance.				
Fiscal Year	2011	2012	2013	2014	2015
Target	55 % of progress (cumulative)	75 % of progress (cumulative)	85 % of progress (cumulative)	90 % of progress (cumulative)	100 % of progress (cumulative)
Result	Met - 55	Not Met - 65	Not Met - 68	Met - 90	Met - 100
Endpoint Target	By the end of FY 2015, achieve temperature and pressure conditions in the laboratory relevant to weapons' primaries. This activity is performed in collaboration with the Science program within the Office of Research and Development.				

Commentary on 2015 Results (Action Plan if Not Met)	The annual target was met. The first hydro-growth radiography (HGR) shot with a beryllium capsule was completed on NIF and data is being analyzed. The HGR experiment measures the ablation front hydrodynamic instability growth for ICF capsule implosions. These results are important because this data contributes to a better understanding of the complex physics associated with the ignition domain.
Documentation, Limitations, Methodology, Validation, and Verification	Predictive Capability Framework; NA-10 Milestone Reporting Tool (MRT) status reports

Advanced Simulation and Computing

The Advanced Simulation and Computing (ASC) Campaign provides leading edge, high-end simulation capabilities to meet the requirements of weapons assessment and certification, including weapon codes, weapons science, computing platforms, and supporting infrastructure. The ASC Campaign serves as the computational surrogate for nuclear testing to determine weapon behavior. The ASC Campaign underpins the Annual Assessment of the stockpile, and is an integrating element of the Predictive Capability Framework.

Program	Advanced Simulation and Computing				
Performance Goal (Measure)	Reduced Reliance on Calibration - The cumulative percentage reduction in the use of calibration "knobs" to successfully simulate nuclear weapons performance.				
Fiscal Year	2011	2012	2013	2014	2015
Target	35 % cumulative reduction in use of calibration "knobs"	40 % cumulative reduction in use of calibration "knobs"	45 % cumulative reduction in the use of calibration "knobs"	44 % cumulative reduction in the use of calibration "knobs"	46 % cumulative reduction in the use of calibration "knobs"
Result	Met - 35	Not Met - 38	Not Met - 41	Met - 44	Met - 46
Endpoint Target	By the end of FY 2024, 100% of selected calibration knobs (non-science based models) affecting weapons performance simulation have been replaced by science-based, predictive phenomenological models. Reduced reliance on calibration will ensure the development of robust ASC simulation tools. These tools are intended to enable the understanding of the complex behaviors and effect of nuclear weapons, now and into the future, without nuclear testing.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved 100% of the annual target of 46% cumulative percentage reduction in the use of calibration "knobs" to successfully simulate nuclear weapons performance. Q4 accomplishments: Level two milestones (sourced in the ASC FY 2015 Implementation Plan, Version 1.0, pages 12-14) were used to evaluate and track progress and were completed as planned by the end of FY 2015. This result is important because the continued reduction in the use of calibration "knobs" will improve our ability to continue to certify nuclear weapons performance without underground tests.				

Documentation, Limitations, Methodology, Validation, and Verification	Laboratory reports to HQ Program Manager; NA-10 Milestone Reporting Tool (MRT) status reports
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Advanced Manufacturing Development

The Readiness Campaign operates the capability for producing tritium to maintain the national inventory needed for the nuclear weapons stockpile and selects and matures production processes and technologies that are required for manufacturing components to meet Directed Stockpile Work production requirements.

Program	Advanced Manufacturing Development				
Performance Goal (Measure)	Component Manufacturing Development - The annual progress towards the maturation of production technologies and manufacturing capabilities as measured by the number of deliverables completed.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	5 deliverables	5 deliverables	6 deliverables
Result			Exceeded - 6	Met - 5	Met - 6
Endpoint Target	The NNSA will continue to mature production technologies and manufacturing capabilities to support nuclear weapons refurbishment and assessment activities to support Directed Stockpile Work.				
Commentary on 2015 Results (Action Plan if Not Met)	This target was exceeded by achieving all 6 planned deliverables six months ahead of schedule. This is important because the Component Manufacturing Development program completed more scope than originally planned in FY 2015. These results demonstrate significant impact on NNSA's ability to conduct surveillance and inspection on multiple weapon components in the stockpile.				
Documentation, Limitations, Methodology, Validation, and Verification	Milestones and a table of deliverables supporting the performance measures are documented in the Program Implementation Plan (PIP). Weekly and monthly site status calls with the Federal Program Managers are documented. Milestone Reporting Tool (MRT) status reports also document progress performance on a quarterly basis. In addition, bi-annual and annual accomplishments are provided by the sites to Federal Program Manager in formal program reviews. Federal Program Manager and staff confirm capabilities completion during site field visits and Program Reviews.				

Infrastructure and Operations

The goal of Site Stewardship is to ensure the overall health and viability of the NNSA nuclear security enterprise and to support the Department of Energy and other national missions, bringing focus to a number of areas including facility operations, sustainability, environmental compliance, and nuclear materials disposition. The program goal and objectives of Site Stewardship align with the Department's Strategic Plan (May 2011) goals and management principles, by ensuring capabilities and resources are available to address a number of challenges in the areas of facility operations, environmental compliance, energy, security and management.

Program	Infrastructure and Operations				
Performance Goal (Measure)	Operations of 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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	95 % availability	85 % availability
Result				Exceeded - 98	Exceeded - 98.6
Endpoint Target	Mission critical and mission dependent facilities are available at least 95% of scheduled days annually.				
Commentary on 2015 Results (Action Plan if Not Met)	Exceeded the target of 85% of facilities available for operations in FY 2015. Mission critical and mission dependent facilities were available 98.6% of the scheduled days. This result is important because it demonstrates operational effectiveness and efficiency of mission critical and mission dependent facilities.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly Facility Availability Report, by site				

Program	Infrastructure and Operations				
Performance Goal (Measure)	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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	90 % of projects	90 % of projects	90 % of projects	90 % of projects	90 % of projects
Result	Met - 90	Met - 90	Met - 90	Met - 90	Met - 90
Endpoint Target	Annually achieve 90% of baselined construction projects with TEC greater than \$20M with actual SPI and CPI of 0.9-1.15 as measured against approved baseline definitions.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual performance target met. Six of six baselined projects: Transuranic Waste Facility (TWF); TA-55 Reinvestment (TRP) II, Phase C, Radioactive Liquid Waste Treatment Facility Upgrade-Low Level liquid				

	Waste (LLW) Treatment Facility Subproject, all at LANL, Nuclear Facility Risk Reduction Facility (NFRR) and UPF Site Readiness (SR) Subproject, both at Y-12, and High Explosive Pressing Facility at Pantex achieved performance indices within specified ranges. High Explosive Pressing Facility completed construction and full startup activities are pending receipt of critical documents from the USACE. NFRR received CD-4 in January 2015, well ahead of the December 2015 baseline date. UPF SR Subproject received CD-4 in February 2015. Demolition of the PF-7 part of the TRP II, Phase C was completed on time. Construction for the LLW Subproject was awarded in 1Q FY 2015 as planned. TWF construction is progressing slightly behind schedule; mat foundations for all six buildings are in place and structural steel for all are erected and enclosed. The Operation Building is enclosed and work inside continues. Substantial completion of the Operations Building was not achieved on 26 Aug 2015. As a result, the construction subcontractor is being charged for liquidated damage. TRP II Phase C construction is also progressing slightly behind schedule, however, it met the target CPI, SPI of 0.9. Monthly project progress reports include Earned Value Management (EVM) data and DOE Project Assessment and Reporting System (PARS) reporting data. This result is important because it demonstrates effective program management over multiple projects and improved efficiencies for managing the nuclear weapons mission.
Documentation, Limitations, Methodology, Validation, and Verification	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; Milestone Reporting Tool (MRT) status reports.

Secure Transportation Asset

As a departmental asset, the Secure Transportation Asset (STA) program safely and securely transports nuclear weapons, weapons components, and special nuclear materials to meet projected Department of Energy (DOE), Department of Defense (DoD), and other customer requirements. STA contains two activities – Program Direction, and Operations and Equipment. Program Direction provides primarily for the federal agents and the secure transportation workforce. Operations and Equipment provides for STA's transportation service infrastructure that is critical in meeting the stockpile refurbishment and modernization initiatives of the nuclear security enterprise.

Program	Secure Transportation Asset				
Performance Goal (Measure)	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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	100 % of shipments	100 % of shipments	100 % of shipments	100 % of shipments	100 % of shipments
Result	Met - 100	Met - 100	Met - 100	Met - 100	Met - 100
Endpoint Target	Annually, ensure that 100% of shipments are completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material.				
Commentary on 2015 Results (Action Plan if Not Met)	Target met. Fully achieved the annual target of 100% safe and secure shipments. Accomplishments for the fourth quarter includes: an on-time annual delivery rate of 97%, exceeding the STA goal of 90%. This result				

	is important because it indicates mission accomplishment, especially in light of the increased risks and threats to the nuclear security enterprise.
Documentation, Limitations, Methodology, Validation, and Verification	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 and maintained by the Program. Official justification are contained internally within program secondary documents to include: Office of Mission Operations Manager Certification Memo, On Time Delivery Quarterly Report, On Board Agent Availability Report, and a Level II Milestone Report.

Nuclear Counterterrorism Incident Response Program

The Nuclear Counterterrorism Incident Response (NCTIR) program responds to and mitigates nuclear and radiological incidents worldwide and has a lead role in defending the Nation from the threat of nuclear terrorism.

Program	Nuclear Counterterrorism Incident Response Program				
Performance Goal (Measure)	Emergency Operations Readiness Index - Emergency Operations Readiness Index (EORI) 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, whereas the year end will be expressed as the average readiness for the year's four quarters).				
Fiscal Year	2011	2012	2013	2014	2015
Target	91 EORI	91 EORI	91 EORI	91 EORI	91 EORI
Result	Not Met - 85	Exceeded - 93	Not Met - 81	Met - 91	Met - 91
Endpoint Target	Annually, maintain an Emergency Operations Readiness Index of 91 or higher. Note: This target is under assessment resulting from reorganization. Although the Nuclear Incident Team remains under Emergency Operations, the program will reassess its Readiness measure.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved the annual target of 91 Readiness Index level. At the end of September, an error was recognized in calculations for Q 2&3. Results for Q3 have been corrected and Q4 results are updated. This result is important because it identifies problem areas that may need to be adjusted for improved program management and better oversight, and achievement of the overall Readiness Index for the fiscal year.				
Documentation, Limitations, Methodology, Validation, and Verification	ARMS Reports; Weekly Meetings; Daily situational reports; Daily Infrastructure reports; ARMS website https://arms.ora.gov/ ; After action reports – evaluators; After action reports – controllers; State, local, & federal reports validating our response efforts; Task Orders/Work Authorizations				

Site Stewardship

The goal of Site Stewardship is to ensure the overall health and viability of the NNSA nuclear security enterprise and to support the Department of Energy and other national missions, bringing focus to a number of areas including facility operations, sustainability, environmental compliance, and nuclear materials disposition. The program goal and objectives of Site Stewardship align with the Department's Strategic Plan (May 2011) goals and management principles, by ensuring capabilities and resources are available to address a number of challenges in the areas of facility operations, environmental compliance, energy, security and management.

Program	Site Stewardship				
Performance Goal (Measure)	Environmental Monitoring and Remediation - Annual percentage of environmental monitoring and remediation deliverables that are required by regulatory agreements to be conducted at NNSA sites under Long Term Stewardship (LTS) that are executed on schedule and in compliance with all acceptance criteria.				
Fiscal Year	2011	2012	2013	2014	2015
Target	95 % of deliverables	95 % of deliverables	95 % of deliverables	95 % of deliverables	95 % of deliverables
Result	Exceeded - 100	Exceeded - 100	Exceeded - 100	Exceeded - 100	Exceeded - 100
Endpoint Target	Annually, submit on schedule and receive regulatory approval of at least 95% of all environmental monitoring and remediation deliverables that are required at NNSA sites under LTS by regulatory agreements. Note: The Environmental Projects and Operations (EPO) has been renamed Long-Term Stewardship and has been moved from the Site Stewardship program to the Infrastructure and Operations program, formerly named Readiness in Technical Base and Facilities (RTBF), starting in FY 2016.				
Commentary on 2015 Results (Action Plan if Not Met)	Exceeded the quarterly target of 95% by completing 100% of required environmental monitoring and remediation deliverables on schedule and acceptable by regulatory agreements. Meeting these regulatory deliverables is important as it prevents the issuance of notices of violations (NOVs), fines, and penalties by the regulators due to deliverables being late or insufficient.				
Documentation, Limitations, Methodology, Validation, and Verification	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				

Defense Nuclear Security

Safeguards and Security (S&S) is comprised of two Government Performance and Results Act (GPRA) Unit Programs. The Defense Nuclear Security (DNS) program, managed by the National Nuclear Security Administration (NNSA) Associate Administrator for Defense Nuclear Security, provides protection for NNSA personnel, facilities, nuclear weapons, and information from a full spectrum of threats, most notably from terrorism, which has become of paramount concern since the September 11, 2001 attacks. The National Nuclear Security Administration Chief Information Officer (CIO) Activities program (formerly Cyber Security), managed by the NNSA Chief Information Officer, and provides the requisite guidance needed to ensure that sufficient information management security safeguards are implemented throughout the NNSA enterprise. These program efforts are integrated under NNSA's Chief of Defense Nuclear Security.

Program	Defense Nuclear Security
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Performance Goal (Measure)	Enterprise Risk Management (ERM) - Implement and sustain a repeatable process for conducting site vulnerability and risk assessments and a set of consistent deliverables to help Federal oversight ensure the security program is integrated, robust, and efficient.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	90 % index	90 % index
Result				Met - 90	Met - 90
Endpoint Target	BY 2017, achieve an improved corporate understanding of site operations, protection strategies, and risk acceptance that enables decision-makers to make true cost/benefit and risk acceptance decisions for physical security, better risk-informed resource allocation decisions, and more balance across NNSA sites, maintaining a 95% index thereafter.				
Commentary on 2015 Results (Action Plan if Not Met)	4Q results: Achieved 100% of the annual target of 90% implementation and sustainment of a repeatable process for conducting site vulnerability and risk assessments and a set of consistent deliverables to help Federal oversight ensure the security program is integrated, robust, and efficient by the end of the FY. At this time, a program plan for this process has been prepared, resources have been identified, and initial assessments have been completed at LANL, Y-12, Pantex, NNSS, KCP, SRS, and SNL NM. The only remaining site for an initial assessment is LLNL and they are scheduled for December 2015. This result is important because it ensures consistent protection strategies across the Enterprise which are understandable and defensible.				
Documentation, Limitations, Methodology, Validation, and Verification	Enterprise Vulnerability Assessment Project Plan.				

Program	Defense Nuclear Security				
Performance Goal (Measure)	Physical Security Infrastructure Recapitalization - Implement and maintain a physical security life cycle management process, including on-time and to-standard supplemental deliverables after implementation.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	85 % index	85 % index
Result				Exceeded - 100	Met - 85
Endpoint Target	By 2017, achieve defensible prioritization of systems investments based on risk, more efficient bulk procurements, more common systems configurations/designs, timely redistribution of inventories based on site needs, and more accurate reporting to external stakeholders on condition of NNSA security systems, maintaining a 95% index thereafter.				
Commentary on 2015 Results (Action Plan if Not Met)	4Q results: Achieved 100% of the annual target of 85% implementation and sustainment of a repeatable process for establishing the baseline of physical security system components and a consistent deliverable				

	(Physical Security Supplemental) that will ensure Federal oversight knowledge level of the state of the physical security program. At this time, sites are reporting their physical security equipment holdings through the Physical Security Systems Supplemental on a quarterly basis. This result is important because it ensures knowledge of readiness of the NNSA Physical Security Systems as well as providing information on prioritization of all lifecycle projects. Additionally, the Center for Security Technology, Analysis, Response and Testing (CSTART) is currently conducting field work to finalize the prioritization of security infrastructure replacements and upgrades, which then will become a 10-year lifecycle plan. Field visits have been conducted at Y-12, LANL, and LLNL to date, and the remaining sites will be completed during FY 2016.
Documentation, Limitations, Methodology, Validation, and Verification	Physical Security Supplemental Project Plan, Site Visit Reports, Physical Security Supplemental quarterly and annual reports. PSIR Index is calculated using a rate/weight model that incorporates.

Program	Defense Nuclear Security				
Performance Goal (Measure)	Protective Force Training Reform - Implement and sustain an Enterprise Mission Essential Task List (EMETL)-based training program for protective forces at all eight NNSA sites.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	90 % index	90 % index
Result				Exceeded - 100	Met - 90
Endpoint Target	By FY 2017, produce protective forces that are high-performing in mission accomplishment with a necessary/appropriate training program that minimizes unproductive training time, maintaining a 95% index thereafter.				
Commentary on 2015 Results (Action Plan if Not Met)	4Q results: Achieved 100% of the annual target of 90% implementation and sustainment of an Enterprise Mission Essential Task List (EMETL)-based training program for protective forces at all eight NNSA sites. All sites have implemented the EMETL-based training program and have developed procedures for sustaining the program. Additionally, DNS released version 4.0 of the EMETL Field Manual (FM) on 29 September 2015. The most notable change from the previous version was the addition of tasks associated with response to Unmanned Aerial Systems (UAS). Timely FM updates are important because it ensures enterprise-wide protective force readiness through a corporate approach to continuously identifying and addressing mission-critical training needs. Quarterly performance assessment reports continue to be analyzed by the Program Office to identify enterprise-wide needs and to provide NNSA senior leadership with a current and comprehensive snapshot of protective force capabilities in all mission-essential task areas.				
Documentation, Limitations, Methodology, Validation, and Verification	EMETL Project Plan, Site Assistant Visit Reports, EMETL Implementation quarterly and annual reports				

NNSA IT and Cybersecurity

The goal of the Information Technology and Cybersecurity (formerly NNSA CIO Activities program) is to ensure that sufficient information management security safeguards are implemented throughout the nuclear security enterprise to adequately protect the NNSA information assets and to provide the requisite guidance in compliance with the Department of Energy's (DOE) Defense-in-Depth Cyber Security strategy and the NNSA Information Management Strategic Plan. The NNSA IT and Cybersecurity Activities program is a Homeland Security related activity.

Program	NNSA IT and Cybersecurity				
Performance Goal (Measure)	Cybersecurity Assessment Reviews - Annual Percentage of Cybersecurity Site Assessment Reviews conducted by the Office of Enterprise Assessment (EA) and that resulted in the rating of "effective."				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	100 % of reviews resulting in "effective" rating	100 % of reviews resulting in "effective" rating	100 % of reviews resulting in "effective" rating	100 % of reviews resulting in "effective" rating
Result		Not Met - 67	Met - 100	Met - 100	Met - 100
Endpoint Target	Annually, achieve at least an "effective" rating of 100% of OCIO site assistance visit (SAV) Cybersecurity reviews.				
Commentary on 2015 Results (Action Plan if Not Met)	Met the annual target by achieving ratings of "effective" for 3 of 3 cybersecurity site assessment reviews conducted by the Office of Environment, Health, Safety, and Security (EHSS). EHSS completed cybersecurity assessment reviews of NSC, LANL, and SNL. Results of assessment reviews were issued in the Independent Evaluation of the U.S. Department of Energy's Information Security Program for National Security Systems Annual Report. This result is important because it provides an assessment of potential deficiencies in the management, operational and technical control implementation at NNSA sites that would lead to a significant loss of confidentiality, integrity, or availability of systems and the data they contain that is critical to enabling successful performance of mission requirements/business commitments.				
Documentation, Limitations, Methodology, Validation, and Verification	HSS Final Assessment Report				

Counterterrorism and Counterproliferation Programs

The Counterterrorism and Counterproliferation (CT/CP) program makes strategic investments in the national security science, technology and engineering capabilities and infrastructure base that are necessary to address current and future global security issues. The CT/CP budget is separated into its own budget line to highlight technical investments. This program integrates the management, development, and maintenance of CT/CP capabilities that are relied upon by agencies across the Federal government and provides transparency, alignment, and accountability into the investments made in workforce and infrastructure to preserve national security capabilities into the future.

The facilities and the expert multidisciplinary workforce within the nuclear security enterprise provide decision makers with the ability to understand the state of international scientific and technological advances as well as project how these advances could affect national security. Furthermore, their unique

multidisciplinary infrastructure is key to anticipating technological surprise and for providing rapid innovative solutions to complex technical problems faced by multiple agencies. To address these national security challenges beyond the nuclear stockpile, the administration is committed to both retain and nurture national security research and development capabilities to serve broader national security interests.

Note: The CTCP program (formerly National Security Applications) consolidates projects from the Nuclear Counterterrorism (NCT) program (formerly under NCTIR) with refocused, enduring projects from the NSA program.

Program	Counterterrorism and Counterproliferation Programs				
Performance Goal (Measure)	WMD Counterterrorism Expertise - Cumulative number of officials trained in Weapons of Mass Destruction (WMD) Counterterrorism (CT) prevention and response via Office of Counterterrorism Policy and cooperation exercises.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	9,500 trained personnel	10,200 trained personnel	11,000 trained personnel
Result			Met - 9,500	Exceeded - 10,280	Met - 11,000
Endpoint Target	<p>By the end of FY 2020, train 14,800 officials in WMDCT prevention and response.</p> <p>Note: The Office of Counterterrorism Policy and Cooperation's WMDCT Exercise Program designs, produces, and conducts tailor-made tabletop exercises for domestic public and private sector customers with nuclear or radioactive materials or associated nuclear security responsibilities. Internationally, the program works with key foreign partners to design, develop, and conduct National and regional WMD security and WMD counterterrorism tabletop exercises. Designed to build teamwork and an in-depth understanding of the roles and responsibilities of agencies charged with responding to terrorist-related radiological, nuclear, or WMD-related incidents, these exercises bring together Federal/National, State, and local decision-makers and first responders. This metric provides a quantitative (cumulative number of officials trained) measure of this program's impact.</p>				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Achieved the FY 2015 target of training a cumulative 11,000 first responders, security, and WMD CT officials. Executed tabletop exercise at the Intermountain Medical, Salt Lake City, UT, training an additional 84 officials during Q4. This result is important because it measures the Counterterrorism program's progress in strengthening WMD CT capabilities by training Federal, state, local, and international officials to address WMD terrorism incidents. Additionally, conducted a tabletop exercises (TTX) for 35 Kazakhstani government representatives on that country's counter nuclear smuggling National Response Plan. Twenty-eight (28) of those participated in a follow-on "train-the-facilitator" to learn the skills required for building and facilitating a TTX.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	Exercise Attendance Lists, After-Action Reports, Multi-Year Counterterrorism and Counterproliferation Management Plan (CCMP) dated November 2012				

Defense Nuclear Nonproliferation

Defense Nuclear Nonproliferation Research and Development

This program improves U.S. national security through the development of novel technologies to detect foreign nuclear weapons proliferation/detonation and verification of foreign commitments to treaties and agreements.

Program	Defense Nuclear Nonproliferation Research and Development				
Performance Goal (Measure)	Nuclear Detonation Detection - Annual index that summarizes the status of all NNSA nuclear detonation detection R&D deliveries that improve the nation's ability to detect nuclear detonations.				
Fiscal Year	2011	2012	2013	2014	2015
Target	90 % index	90 % index	90 % index	90 % index	90 % index
Result	Met - 90	Met - 90	Met - 90	Met - 90	Met - 90
Endpoint Target	Annually achieve timely delivery of NNSA nuclear detonation detection products. (90% target reflects good on-time delivery. Index considers factors beyond NNSA's control and impact on customer schedules.)				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved the FY 2015 delivery of nuclear detonation detection sensor payloads in accordance with current US Air Force published schedule for satellite production. These deliveries included: One Global Burst Detector sensor payload and three others contained in the Global Positioning System (GPS) IIF-8, -9, and -10 satellites launched during FY 2015, with Early On-orbit Testing support completed after each launch. This result is important because it maintains U.S National capability to monitor the Earth for nuclear detonations.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly reports; Final delivery transmittal letters to user agencies for satellite payloads ('Consent to Ship' letters); Integrated Research Product Releases				

Program	Defense Nuclear Nonproliferation Research and Development				
Performance Goal (Measure)	Nuclear Weaponization and Material Production Detection - Cumulative percentage of progress toward demonstrating improvements in detection and characterization capabilities of nuclear weapons production activities.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	20 % progress	50 % of progress
Result				Met - 20	Met - 50
Endpoint Target	By the end of FY 2018, achieve 100% cumulative progress toward demonstrating new capabilities detecting uranium and plutonium production and nuclear weaponization processes.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved the cumulative target of 50% progress. Demonstrated new or improved capabilities against 8 of 17 total requirements and made progress toward completion of 38 deliverables in FY 2015. Progress is measured by meeting research tasks in life cycle plans as described in Quarterly Reports and annually				

	through Technology Readiness Assessments, as directed in the DNN R&D Technology Readiness and Maturation Guide. Specific requirements are described in the Nuclear Weapons Development and Material Production Detection Technical Roadmap. Each requirement has a specified target technical readiness level at which a new/improved capability is demonstrated and a definition of what constitutes successful demonstration. Progress is also independently validated with feedback from Independent Reviews, on annual program review briefings, and tracks with planned milestones. These results are important because they are key U.S. capabilities to increase confidence in detecting foreign nuclear weapons production activities.
Documentation, Limitations, Methodology, Validation, and Verification	Program Plan/Roadmap document; Memorandum for Record (unclassified, located in DNN R&D Office, certified by ADA) for DNN

Program	Defense Nuclear Nonproliferation Research and Development				
Performance Goal (Measure)	Nuclear Weapons and Material Security - The cumulative percentage of progress towards demonstrating improvements in Special Nuclear Material detection, warhead monitoring, chain-of-custody monitoring, safeguards, and characterization capabilities.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	20 % progress	50 % progress
Result				Met - 20	Met - 50
Endpoint Target	By the end of FY 2018, achieve 100% cumulative progress toward demonstrating new capabilities for warhead monitoring, warhead chain-of-custody, Special Nuclear Material movement detection, and nuclear safeguards.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved the cumulative target of 50% progress. Demonstrated new or improved capabilities against 8 of 17 total requirements and made progress toward completion of 102 deliverables in FY 2015. Progress is measured by meeting research tasks in life cycle plans as described in Quarterly Reports and annually through Technology Readiness Assessments, as directed in the DNN R&D Technology Readiness and Maturation Guide. Specific requirements are described in the Weapons and Material Security Technical Roadmap. Each requirement has a specified target technical readiness level at which a new/improved capability is demonstrated and a definition of what constitutes successful demonstration. Progress is also independently validated with feedback from Independent Reviews, on annual program review briefings, and tracks with planned milestones. This result is important because it improves U.S. capability to detect and interdict Special Nuclear Material movement, monitor compliance with international treaties, and detect the diversion of fissile materials from peaceful purposes.				
Documentation, Limitations, Methodology, Validation, and Verification	Program Plan/Roadmap document; Memorandum for Record (unclassified, located in DNN R&D Office, certified by ADA) for DNN				

Program	Defense Nuclear Nonproliferation Research and Development				
Performance Goal (Measure)	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").				
Fiscal Year	2011	2012	2013	2014	2015
Target	65 % of progress	75 % of progress	90 % of progress	95 % of progress	100 % of progress
Result	Met - 65	Met - 75	Met - 90	Met - 95	Met - 100
Endpoint Target	By the end of FY 2015, demonstrate the next generation of technologies and methods to detect Plutonium production activities.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved the cumulative target of 100% progress. Demonstrated completion of 17 deliverables in FY 2015. Progress is based on meeting research tasks in life cycle plans as described in Quarterly and Final Reports, on feedback from Independent Reviews, on successful demonstration of capabilities, and on annual program review briefings; tracks with planned milestones. This result is important because it increases the U.S. capability to detect foreign nuclear weapons production activities.				
Documentation, Limitations, Methodology, Validation, and Verification	Program Plan/Roadmap document; Memorandum for Record (unclassified, located in Defense Nuclear Nonproliferation (DNN) R&D office, certified by Assistant Deputy Administrator) for DNN				

Program	Defense Nuclear Nonproliferation Research and Development				
Performance Goal (Measure)	Uranium-235 Production Detection - Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect uranium-235 enrichment activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document".)				
Fiscal Year	2011	2012	2013	2014	2015
Target	50 % of progress	60 % of progress	75 % of progress	90 % of progress	95 % of progress
Result	Met - 50	Met - 60	Met - 75	Met - 90	Met - 95
Endpoint Target	By the end of FY 2016, demonstrate the next generation of technologies and methods to detect uranium-235 enrichment activities.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved the cumulative target of 95% progress. Demonstrated completion of 14 of 14 deliverables in FY 2015. Progress is based on meeting research tasks in life cycle plans as described in Quarterly and Final Reports, on feedback from Independent Reviews, on successful demonstration of capabilities, and on annual program review briefings; tracks with planned milestones. This result is important because it increases the U.S. capability to detect foreign nuclear weapons production activities.				
Documentation, Limitations, Methodology, Validation, and Verification	Program Plan/Roadmap document; Memorandum for Record (unclassified, located in DNN R&D Office, certified by ADA) for DNN				

Nonproliferation and International Security

The Office of Nonproliferation and International Security (NIS) supports National Nuclear Security Administration (NNSA) efforts to prevent and counter the proliferation or use of weapons of mass destruction (WMD), including materials, technology and expertise, by state and non-state actors. NIS focuses on strengthening the nonproliferation regime in order to reduce proliferation risks by applying its unique expertise to safeguard nuclear material and strengthen its physical security; control the spread of WMD-related material, equipment, technology and expertise; verify nuclear reductions and compliance with nonproliferation treaties and agreements; and develop and implement Department of Energy (DOE)/NNSA nonproliferation and arms control policy. NIS pursues these objectives through four programs: (1) Nuclear Safeguards & Security; (2) Nuclear Controls; (3) Nuclear Verification; and (4) Nonproliferation Policy.

Program	Nonproliferation and International Security				
Performance Goal (Measure)	International Nonproliferation Export Control Program - Cumulative number of countries where International Nonproliferation Export Control Program (INECP) is engaged that have export control systems that meet critical requirements.				
Fiscal Year	2011	2012	2013	2014	2015
Target	22 countries	29 countries	31 countries	34 countries	35 countries
Result	Exceeded - 27	Met - 29	Met - 31	Met - 34	Met - 35
Endpoint Target	By the end of FY 2025, 45 countries where INECP is engaged will have export control systems that meet critical requirements, defined as having: (1) control lists consistent with the WMD regimes; (2) initiated outreach to producers of WMD-related commodities; (3) developed links between technical experts and license reviewers and front-line enforcement officers; and (4) begun customization of educational materials and technical guides.				
Commentary on 2015 Results (Action Plan if Not Met)	The program met the FY 2015 target of 35 countries that meet critical export control system requirements. This number is derived from an annual review of updates to engagement plans for countries in which INECP has an active program. This result is important because it documents the success of the program building capacity in national systems of export control to prevent the spread of WMD-related commodities.				
Documentation, Limitations, Methodology, Validation, and Verification	International Nuclear Export Control program database records and original input documents; INECP engagement plans and After Action Reports				

Program	Nonproliferation and International Security				
Performance Goal (Measure)	Reduce Nuclear Terrorism Threat - In order to reduce the threat of nuclear terrorism, evaluate the physical security of U.S. obligated nuclear material located at foreign facilities by conducting bilateral physical security assessment reviews designed to evaluate the adequacy of existing security measures and provide recommendations for enhancing security if necessary.				
Fiscal Year	2011	2012	2013	2014	2015

Target	N/A	N/A	N/A	6 assessments	6 assessments
Result				Met - 6	Met - 6
Endpoint Target	Annually review the physical security of U.S.-obligated nuclear material located at foreign facilities in order to reduce the threat of nuclear terrorism.				
Commentary on 2015 Results (Action Plan if Not Met)	The program met the FY 2015 target of completing 6 bilateral physical protection security assessment reviews of foreign facilities holding U.S.-obligated nuclear material. In Q1, two security assessments were completed (Jamaica and Ukraine follow-up visit); in Q2, two security assessments were completed (United Kingdom and Belgium); and two assessments were completed in Q4 (Thailand and Philippines). This result is important because it documents progress of the program in ensuring the security of nuclear material to reduce the threat of nuclear terrorism.				
Documentation, Limitations, Methodology, Validation, and Verification	Physical Protection Site Assessment database records and official reports; Bi-lateral Physical Protection Reports				

Program	Nonproliferation and International Security				
Performance Goal (Measure)	Safeguards Tools - Annual number of safeguards tools transferred and used in international regimes and other countries that address an identified safeguards deficiency.				
Fiscal Year	2011	2012	2013	2014	2015
Target	5 systems	5 systems	5 systems	5 systems	5 systems
Result	Met - 5	Met - 5	Met - 5	Met - 5	Met - 5
Endpoint Target	Annually transfer tools to international regimes and other countries to address identified safeguards deficiencies. Note: Change "deployed" to "transferred" to more accurately describe the process by which the NPAC Safeguards program achieves its mission and to eliminate redundancy in the current measure. Adjusting endpoint to recognize an annual, continuing effort.				
Commentary on 2015 Results (Action Plan if Not Met)	The program met the FY 2015 target of transferring 5 tools to international partners. In Q3, one tool was deployed (the High Count Rate Electronics Prototype to the IAEA), and in Q4 four tools were deployed (ASID Neutron Splitter Box to South Africa, RADAR-ORIGEN Upgrade to Euratom, Orella Spent Fuel Analysis Module Upgrade to the IAEA, and a Single Chip Shift Register to the IAEA). This result is important because the technology transfers will allow partners to more effectively and efficiently account for and control nuclear materials, and help ensure complete and correct reporting to the International Atomic Energy Agency (IAEA).				
Documentation, Limitations, Methodology, Validation, and Verification	Shipping records; technical reports; e-mails confirming receipt; photographs; and other documentation.				

International Material Protection and Cooperation

The International Material Protection and Cooperation (IMPC) program prevents nuclear terrorism by working in Russia and other regions of concern.

Program	International Material Protection and Cooperation				
Performance Goal (Measure)	MPC&A Initiatives - Annual number of total upgrade and sustainability initiatives completed and transitioned to host country.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	12 initiatives completed	7 initiatives completed
Result				Met - 12	Met - 7
Endpoint Target	By the end of FY 2018, complete the sustainability phase of 37 MPC&A initiatives with foreign partners.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Met revised FY 2015 target. No additional initiatives were completed in FY 2015. This result is important because it impacts protection of weapons-grade material from threat of theft.</p> <p>OMB approved GMS' change request to revise the FY 2015 target for this metric, due to Russia's decision to limit the scope of MPC&A cooperation. GMS completed 100% of the revised number of initiatives in FY 2015.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	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				

Program	International Material Protection and Cooperation				
Performance Goal (Measure)	MPC&A Upgrades - Buildings - Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades.				
Fiscal Year	2011	2012	2013	2014	2015
Target	218 buildings	221 buildings	229 buildings	229 buildings	221 buildings
Result	Met - 218	Not Met - 218	Not Met - 218	Not Met - 218	Met - 221
Endpoint Target	Complete MPC&A upgrades on a cumulative total of 221 buildings containing weapon-usable nuclear material.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Met revised endpoint target of 221. This metric is complete. This result is important because it impacts protection of weapons-grade material from threat of theft.</p> <p>OMB approved GMS' change request to revise the FY 2015 target to 221. The remaining 8 buildings were not completed due to Russia's decision to reduce the scope of MPC&A cooperation.</p>				

Documentation, Limitations, Methodology, Validation, and Verification	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
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Program	International Material Protection and Cooperation				
Performance Goal (Measure)	Mobile Detection System (MDS) - Cumulative number of Mobile Detection Systems (MDS) deployed.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	72 MDS	97 cumulative MDS
Result				Exceeded - 76	Not Met - 96
Endpoint Target	By the end of FY 2019, deploy 167 Mobile Detection Systems.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Largely achieved the FY 2015 cumulative target of 97 Mobile Detection Systems (MDS) provided. 5 MDS units were deployed in the fourth quarter of FY 2015, for a total of 20 MDS units deployed in FY 2015. The total cumulative number of MDS deployed as of the end of the fourth quarter FY 2015 is 96 units.</p> <p>The annual target was missed because of import/export issues encountered in the Philippines.</p> <p>NSDD's work to provide MDS is important because it gives host governments a 'mobile' technical means to detect, deter, and interdict illicit trafficking of nuclear and other radioactive materials.</p> <p>Action Plan: This work remains a high priority and DOE/NNSA will keep working to enhance partner countries radiation detection capability. Import/export issues in the Philippines prevented NSDD from achieving the targeted MDS deployments. These issues are being resolved and NSDD anticipates successful deployment in Q1 FY2016.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	Schedules, trip reports, acceptance testing documentation				

Program	International Material Protection and Cooperation				
Performance Goal (Measure)	Sites - Cumulative number of sites with radiation detection systems deployed.				
Fiscal Year	2011	2012	2013	2014	2015
Target	463 sites (45 Megaports)	496 sites (45 Megaports)	513 sites (45 Megaports)	548 sites/ports	575 cumulative sites
Result	Not Met - 460	Not Met - 493	Met - 513	Exceeded - 550	Met - 575
Endpoint Target	By the end of FY 2019, provide radiation detection systems to approximately 639 cumulative sites.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved 100% of the annual target of 575 sites with radiation detection equipment. Work completed in the fourth quarter resulted in 16 additional site installed, for a total of 25 sites installed in FY 2015.				

	Nuclear Smuggling Detection and Deterrence (NSDD's) work on these sites is important because it provides host governments with the technical means to detect, deter, and interdict illicit trafficking of nuclear and other radioactive materials.
Documentation, Limitations, Methodology, Validation, and Verification	Schedules, trip reports, acceptance testing documentation

Program	International Material Protection and Cooperation				
Performance Goal (Measure)	Sustainability - Cumulative number of radiation detection systems that are being indigenously sustained.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	431 sites/ports	490 cumulative radiation detection systems
Result				Not Met - 412	Not Met - 488
Endpoint Target	By the end of FY 2020, transfer 786 radiation detection systems to indigenous sustainment.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Largely achieved the FY 2015 cumulative target of 490 radiation detection systems. Work completed in the fourth quarter of FY 2015 resulted in 12 sites being indigenously sustained, for a total of 76 additional sites being indigenously sustained in FY 2015. The total cumulative number of sites in indigenous sustainment as of the end of the fourth quarter FY 2015 is 488. (Note: In FY 2015, the program received approval to include MDS in this metric. To account for MDS that transitioned prior to FY 2015, NSDD is now including 26 previously transitioned MDS in its cumulative total.)</p> <p>The annual target was missed because of political instability in Lebanon. This instability prevented the scheduled transition of some sites to indigenous sustainment.</p> <p>NSDD's work in sustainability is important because it demonstrates that NSDD is successfully transitioning sites to host government responsibility. These host governments are now self-sustaining sites with a capacity to detect, deter, and interdict illicit trafficking of nuclear and other radioactive materials.</p> <p>Action Plan: This work remains a high priority and DOE/NNSA will keep working towards the transition of the remaining 2 detection systems to partner countries. Continued political instability in Lebanon prevented the scheduled transition of some sites to indigenous sustainment. NSDD fully expects these countries to take full responsibility for these sites in the next few years when internal challenges have been overcome.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	Schedules, trip reports, joint transition and sustainability plans.				

Fissile Materials Disposition

The program goal is to eliminate surplus Russian weapon-grade plutonium and surplus United States (U.S.) weapon-grade plutonium and highly enriched uranium.

Program	Fissile Materials Disposition				
Performance Goal (Measure)	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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	62 % completed	70 % completed	81 % completed	90 % completed	TBD
Result	Not Met - 58	Not Met - 67.8	Not Met - 60	Not Met - 71.3	TBD
Endpoint Target	TBD Note: Project will be terminated.				
Commentary on 2015 Results (Action Plan if Not Met)	N/A				
Documentation, Limitations, Methodology, Validation, and Verification	Earned Value Management System (EVMS) data from MOXFFF 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				

Program	Fissile Materials Disposition				
Performance Goal (Measure)	U.S. Highly Enriched Uranium (HEU) Downblended - Cumulative amount of surplus U.S. highly enriched uranium (HEU) down-blended or shipped for down-blending.				
Fiscal Year	2011	2012	2013	2014	2015
Target	136 MT	139 MT	143 MT	146 MT	150 MT
Result	Exceeded - 137.1	Exceeded - 141.1	Exceeded - 143.8	Exceeded - 146.3	Met - 150
Endpoint Target	By the end of FY 2030, complete disposition of 186 MT of surplus HEU. The overall amount of HEU available for down-blending and the rate at which it will be down-blended is dependent upon decisions regarding the U.S. nuclear weapons stockpile, the pace of warhead dismantlement, and receipt of HEU from research reactors as well as other considerations, such as decisions on processing of additional HEU through H Canyon, disposition paths for weapons pits containing HEU, etc.				
Commentary on 2015 Results (Action Plan if Not Met)	Fully achieve the cumulative target of 150 MT of HEU down-blended or shipped for down-blending. Through September 2015, OFMD dispositioned a cumulative total of 150.0 MT of HEU, meeting the FY 2015 target. This result is important because it is contributing to the Department's goal of disposing of surplus U.S. HEU.				

Documentation, Limitations, Methodology, Validation, and Verification	CNS 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
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Program	Fissile Materials Disposition				
Performance Goal (Measure)	U.S. Plutonium Disposition (H-Canyon) - Cumulative kilograms (kg) of plutonium converted to oxide at SR H-Canyon.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	180 kg	100 kg
Result				Not Met - 1	Not Met - 1.8
Endpoint Target	By the end of FY 2023, complete operations for 3.7 MT of plutonium converted to oxide at Savannah River Site.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Behind schedule and will not meet the annual target of converting 100 kg of plutonium to oxide at H Canyon. Through the end of the 4th quarter, SRNS produced ~9.6 kg of plutonium as oxide in HB-Line, with 1.8 kg meeting all MOX physical, chemical, and isotopic specifications. This was caused by failure to meet moisture content specifications as well as a criticality safety control violation. This metric demonstrates the commitment towards the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapon-grade plutonium.</p> <p>Action Plan: HB-Line was not able to achieve consistent plutonium oxide production operations as planned in FY 2015. During 4Q, HB-Line met their resumption schedule following the February incident. Operations were once again paused following an August 2015 Technical Safety Requirement violation relative to criticality safety controls and procedural violations in HB-Line. SRNS is taking a comprehensive approach to addressing the incident. Resumption date is unknown at this time.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	Monthly progress reports from the contractor detailing HB-Line plutonium oxide production.				

Program	Fissile Materials Disposition				
Performance Goal (Measure)	U.S. Plutonium Disposition (LANL) - Cumulative kilograms of plutonium metal converted to oxide at Los Alamos National Laboratory.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	375 kg	592 kg	692 kg	792 kg
Result		Exceeded - 442	Met - 592	Not Met - 617	Not Met - 667
Endpoint Target	By 2029, complete operations for 2 MT (2,000 kg) of plutonium converted to oxide.				

Commentary on 2015 Results (Action Plan if Not Met)	<p>Behind schedule and did not meet the cumulative target of 792 kg due to extended shutdown of operations of the operating facility (PF-4). As of September 30, 2015, 50 kg of plutonium oxide were accepted during the fiscal year, with a resulting cumulative total of 667 kg. The operational pause is due to conduct of operations and criticality safety concerns in PF-4 which impacted the ability to achieve this metric in FY 2015 and will continue to do so in FY 2016. This metric demonstrates the commitment toward the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapon-grade plutonium.</p> <p>Action Plan: Readiness activities at LANL are ongoing and will support resumption of processes that support oxide production during FY 2016.</p>
Documentation, Limitations, Methodology, Validation, and Verification	Cost data from Pu consolidated monthly status reports. Original documents such as a signed statement or email verifying target completion.

Program	Fissile Materials Disposition				
Performance Goal (Measure)	WSB - Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building (WSB).				
Fiscal Year	2011	2012	2013	2014	2015
Target	65 % completed	95 % completed	87 % completed	91 % completed	100 % completed
Result	Exceeded - 70	Not Met - 84	Exceeded - 90	Exceeded - 99	Met - 100
Endpoint Target	Construction and startup activities complete by July 2015.				
Commentary on 2015 Results (Action Plan if Not Met)	Fully achieved 100% completion of the design, construction, and cold start-up activities for the Waste Solidification Building. CD-4 was approved by the Project Management Executive on July 30, 2015. The facility was placed in a lay-up condition pending completion of the MFFF project.				
Documentation, Limitations, Methodology, Validation, and Verification	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				

Global Threat Reduction Initiative

The Global Threat Reduction Initiative (GTRI) program reduces and protects vulnerable nuclear and radiological materials located at civilian sites worldwide.

Program	Global Threat Reduction Initiative				
Performance Goal (Measure)	Highly Enriched Uranium (HEU) Reactors Converted or Shutdown - Cumulative number of HEU reactors and isotope production facilities converted or verified as shutdown prior to conversion.				
Fiscal Year	2011	2012	2013	2014	2015

Target	75 reactors	81 reactors	88 facilities	92 facilities	94 facilities
Result	Exceeded - 76	Exceeded - 82	Met - 88	Met - 92	Met - 94
Endpoint Target	By 2035, convert or verify the shutdown prior to conversion of approximately 156 HEU reactors and isotope production facilities.				
Commentary on 2015 Results (Action Plan if Not Met)	Fully achieved the cumulative target of 94. Two HEU reactors converted or verified as shutdown (Switzerland and Jamaica). This result is important because this effort will minimize the amount of weapons - usable material around the world.				
Documentation, Limitations, Methodology, Validation, and Verification	GTRI Scorecard; Written Notification of conversion; Conversion Report				

Program	Global Threat Reduction Initiative				
Performance Goal (Measure)	Nuclear Material Removed - Cumulative number of kilograms of vulnerable nuclear material (HEU and plutonium) removed or disposed.				
Fiscal Year	2011	2012	2013	2014	2015
Target	3,297 kg	3,555 kg	3,835 kg	5,207 kg	5,332 kilograms
Result	Not Met - 3,125	Not Met - 3,462	Exceeded - 5,017	Met - 5,207	Exceeded - 5,376
Endpoint Target	By 2022, remove or dispose of 7,000 kilograms of vulnerable nuclear material (HEU and plutonium), enough for more than 280 nuclear bombs.				
Commentary on 2015 Results (Action Plan if Not Met)	Exceeded the cumulative target of removing or disposing 5,332 kg of vulnerable nuclear material (HEU and plutonium). In the fourth quarter, successfully removed 16.5 kg of HEU from Canada, Jamaica, Switzerland and Uzbekistan in addition to the third quarter confirmation of the disposition (via downblending) of HEU in France (112.2kg), and through the end of the 2nd quarter, two successful removals (40.2 kg total), for a total of 168.9 kg in FY 2015 and a cumulative total of 5376 kg. This result is important because this effort will minimize the amount of weapons-usable material around the world.				
Documentation, Limitations, Methodology, Validation, and Verification	GTRI Scorecard; Notification of removal; Remove Report				

Program	Global Threat Reduction Initiative				
Performance Goal (Measure)	Radiological Buildings Protected - Cumulative number of buildings with high-priority radiological materials secured.				
Fiscal Year	2011	2012	2013	2014	2015

Target	1,081 buildings	1,355 buildings	1,603 buildings	1,785 buildings	1,890 buildings
Result	Exceeded - 1,187	Exceeded - 1,488	Exceeded - 1,674	Exceeded - 1,816	Exceeded - 1,958
Endpoint Target	4394 by 2033				
Commentary on 2015 Results (Action Plan if Not Met)	Exceeded the cumulative target of 1,890 buildings protected with high priority radiological materials secured. In Q4, an additional 56 (44 international and 12 domestic) buildings were secured. The cumulative total to-date is 1,958. 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. In Q1, the program secured 9 international and 18 domestic buildings. In Q2, the program secured 12 international and 11 domestic buildings; and in Q3, the program secured 26 international and 10 domestic buildings.				
Documentation, Limitations, Methodology, Validation, and Verification	GTRI Scorecard; Monthly notification of protection; Work team reports; Global Threat Reduction Initiative Programmatic Guidelines for Site Prioritization and Protection Implementation				

Naval Reactors

Naval Reactors

Naval Reactors' mission includes ensuring the safety of reactors and associated naval nuclear propulsion plants, and control of radiation and radioactivity associated with naval nuclear propulsion activities, including prescribing and enforcing standards and regulations for these areas as they affect the environment and the safety and health of workers, operators, and the general public. Naval Reactors maintains oversight of program support in areas such as security, nuclear safeguards and transportation, radiological controls, public information, procurement, logistics, and fiscal management.

Program	Naval Reactors				
Performance Goal (Measure)	A1B Reactor Plant Design - Cumulative percentage of completion on the next-generation aircraft carrier reactor plant design.				
Fiscal Year	2011	2012	2013	2014	2015
Target	94 % complete	96 % complete	98 % complete	99 % complete	100 % complete
Result	Met - 94	Met - 96	Met - 98	Exceeded - 99.6	Met - 100
Endpoint Target	By the end of FY 2015, complete 100% of the design of the reactor plant for the next-generation aircraft carrier.				
Commentary on 2015 Results (Action Plan if Not Met)	As of 9/30/2015, 100.0% of the next generation aircraft carrier reactor plant design has been completed. Milestones achieved this quarter: Bechtel Marine Propulsion Corporation (BMPC) physicists qualified for low power physics testing; issued reactor plant instrumentation and control certification report. 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 requires half of the reactor department sailors needed as compared to present-day CVN aircraft carriers.				

Documentation, Limitations, Methodology, Validation, and Verification	CVN 21 Propulsion Plant Planning Estimate & Actual Reporting				
Program	Naval Reactors				
Performance Goal (Measure)	S1B Reactor Plant Design - Cumulative percentage of work complete on the Ohio Replacement submarine reactor plant design.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	12 % complete	17 % complete	22 % complete	32 % complete
Result		Exceeded - 15.6	Exceeded - 18.4	Exceeded - 25.7	Exceeded - 34.6
Endpoint Target	By the end of FY 2027, complete 100% of the <i>Ohio</i> -Class Replacement submarine reactor plant design. Note: In FY 2013, DoD delayed construction start for the lead ship by two years (from FY 2019 to FY 2021) and reactor plant advanced procurement from FY 2017 to FY 2019.				
Commentary on 2015 Results (Action Plan if Not Met)	As of 9/30/2015, 34.6% of the <i>Ohio</i> -Class replacement submarine reactor plant has been completed. Milestones achieved this quarter: submitted reactor vessel flange taper design to NR for approval; submitted main omega seal reference design drawings for NR approval; completed power unit installation tolerance and alignment study; and submitted casualty rod control architecture and arrangement recommendation for NR approval. This result is important because it will provide the Nation's Sea Based Strategic Deterrent into the 2080s. S1B reactor and life-of-ship core design will support over 40 years of operation, exceeding <i>Virginia</i> -Class by more than 10 years, and allow fulfillment of its mission with two fewer submarines than the <i>Ohio</i> -Class.				
Documentation, Limitations, Methodology, Validation, and Verification	S1B Propulsion Plant Planning Estimate & Actual Reporting				

Energy Efficiency and Renewable Energy

Weatherization and Intergovernmental Programs

The mission of the Weatherization and Intergovernmental Programs (WIP) is to partner with state and local organizations to significantly accelerate the deployment of clean energy (e.g., energy efficiency and renewable energy) technologies and practices by a wide range of government, community, and business stakeholders

Program	Weatherization and Intergovernmental Programs
Performance Goal (Measure)	OWIP - Retrofits - Weatherize homes of low income families

	Note: budget measure is for homes weatherized with base DOE funds. From FY 2010 - FY2012 DOE also achieved its joint Priority Goal with the Department of Housing and Urban Development (HUD) of retrofitting 1.2 million homes (cumulative), where DOE retrofitted more than 1 million homes. Most of these homes were retrofitted with Recovery Act funds. The number of homes, energy savings and GHG avoided metrics can be viewed on www.performance.gov .				
Fiscal Year	2011	2012	2013	2014	2015
Target	33,484 homes weatherized*	10,000 homes weatherized	21,286 homes weatherized	24,600 homes weatherized	33,100 homes weatherized
Result	Exceeded - 45,042	Exceeded - 31,871	Met - 21,286	Exceeded - 38,000	Exceeded - 34,220
Endpoint Target	Support 300,000 homes energy retrofits between FY 2013 and FY 2022				
Commentary on 2015 Results (Action Plan if Not Met)	34220				
Documentation, Limitations, Methodology, Validation, and Verification					

Bioenergy Technologies

The Bioenergy Technologies Program catalyzes the development of cost-effective technologies that reduce our dependence on imported petroleum, while lowering greenhouse gas emissions, through the use of domestically produced non-food biomass resources that enable the U.S. to be competitive in emerging renewable energy markets

Program	Bioenergy Technologies				
Performance Goal (Measure)	Biomass - Conversion Cost - Reduce modeled conversion cost for feedstock to gasoline/diesel fuel via a bio-oil pathway (\$2011, \$/gallons of gasoline equivalent, gge)				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	\$3.18 /gge	\$4.1 /gge	\$3.7/gge
Result		- 3.95	Met - 3.13	Met - 4.1	Exceeded - 6.14
Endpoint Target	\$2.5/gge by 2017.				
Commentary on 2015 Results (Action Plan if Not Met)	Using the C5/C6 split stream sugar approach outlined in FY14, the cumulative technical performance for the 2015 State of Technology Case resulted in a conversion cost of \$6.14/gge (in 2011 \$). This exceeds both the 2015 conversion contribution target as stated in the MYPP of \$6.93/gge and the 2015 conversion contribution dashboard target of \$6.40/gge. Deconstruction and C6 conversion to hydrocarbons were on track with goals, and the significantly lower cost achieved was primarily due to significant improvements in succinic acid co-product overall yields (220 lb succinic acid/dry ton, compared to the 2015 goal of 206 lb succinic acid/dry ton and the demonstrated 2014 SOT result of 197 lb succinic acid/dry ton). The succinic				

	acid bioconversion parameters (productivity, metabolic yield, and process yield) all exceeded the 2015 technical targets and in some case are approaching the 2017 technical targets.
Documentation, Limitations, Methodology, Validation, and Verification	

Program	Bioenergy Technologies				
Performance Goal (Measure)	Biomass - Feedstock Logistics Cost - Reduce feedstock logistics cost for delivery to plant (\$/dry-matter ton) [2013 & 2014 targets from 2011 baseline] 2013: Internal approval of design case for the modeled feedstock pathways to achieve the \$80/DT 2017 target, which is part of the \$3/gge programmatic target. 2010 – 2012: Reduce feedstock supply system logistics cost in dollars per dry matter ton (\$/DM ton, in \$2007, for delivery to plant gate or conversion reactor inlet) 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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	36.1 \$/dry-matter ton	35 \$/dry-matter ton	55 \$/dry-matter ton	130 \$/dry-matter ton	115 Dollars
Result	Met - 36.1	Met - 35	Met - 55	Met - 130	Exceeded - 113.63
Endpoint Target	A delivered feedstock cost of \$80 per dry matter-ton by 2017				
Commentary on 2015 Results (Action Plan if Not Met)	Woody Biomass is down from \$101.45/dt to \$92.22/dt (2011\$) and herbaceous biomass is down from \$129.75/dt to \$113.63/dt (2011\$) due mainly to blending and improvements in preprocessing.				
Documentation, Limitations, Methodology, Validation, and Verification					

Geothermal Technology

The mission of the Geothermal Technologies Program is to accelerate the deployment of domestic electricity generation from geothermal resources by investing in transformative research, development, and demonstration-scale projects that will catalyze commercial adoption. Successful efforts will promote a stronger, more productive economy; provide valuable, stable, and secure renewable energy to power the U.S.; and support a cleaner environment.

Program	Geothermal Technology
Performance Goal (Measure)	Geothermal - Systems - Reduce the Levelized Cost of Electricity (LCOE) from newly developed geothermal systems (cents/kWh)

	2013+: includes both hydrothermal and Enhanced Geothermal Systems. 2012: Reduce the LCOE for development of Enhanced Geothermal Systems: assuming non-uniform discount rate. 2011: Increase average total flow rate per production well in kilograms/second for EGS field site				
Fiscal Year	2011	2012	2013	2014	2015
Target	12 average flow rate per production well in kilograms/second for EGS field site	18 cents/KWh for 24-hour electricity production	22.5 cents/KWh for 24-hour electricity production	22.4 cents/kWh	22.4 cents/kWh
Result	Not Met - 0	Met - 18	Met - 22.5	Met - 22.4	Exceeded - 22.3
Endpoint Target	\$0.06/kWh by 2030				
Commentary on 2015 Results (Action Plan if Not Met)	With analysis conducted using GETEM, LCOE was successfully modeled at 22.3 cents in 2012 dollars.				
Documentation, Limitations, Methodology, Validation, and Verification					

Hydrogen and Fuel Cell Technologies

Hydrogen and fuel cells have the potential to improve energy security and reduce emissions of greenhouse gases, criteria pollutants, and net oil imports by improving energy efficiency, enabling alternative fuel sources, and spurring domestic production of clean energy technologies. Widespread use of hydrogen and fuel cells can have a major impact toward achieving EERE's goals of expanding the adoption of sustainable, domestically powered transportation alternatives; improving the efficiency of energy use; stimulating the growth of domestic clean energy manufacturing; and enabling the integration of clean energy into a reliable, resilient, and more efficient electricity grid.

Program	Hydrogen and Fuel Cell Technologies				
Performance Goal (Measure)	Hydrogen and Fuel Cell Technology - Cost - Reduce the cost of hydrogen [\$/Gallon of Gasoline Equivalent) (gge)] 2012: Relative to the 2011 baseline, decrease the capital cost for hydrogen production and delivery using renewable resources.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	20 % decrease	7.6 \$/gge	7.2 \$/gge	6.8 gge
Result		Met - 20	Met - 7.6	Met - 7.2	Met - 6.8
Endpoint Target	\$4/gge by 2020				

Commentary on 2015 Results (Action Plan if Not Met)	<p>The FY15 Q4 milestone of reducing the cost of delivered hydrogen to \$6.80/gge relative to the FY11 baseline of \$8/gge and the FY14 status of \$7/gge has been met using the following cost contributions:</p> <ul style="list-style-type: none"> - Tube trailer consolidation using 540-bar tube trailers: Cost savings associated with hydrogen delivery via 540-bar tube trailers, along with use of the consolidation scheme at the forecourt was established as \$0.19/gge in comparison to the 2014 delivery cost status. (ANL) - Steel Concrete Composite Vessels: ASME certification of a prototype of a 430-bar steel concrete composite vessel for hydrogen storage results in cost savings of \$0.08/gge relative to the 2014 delivery pathway status. (ORNL) - SOEC: A new case study that projects the cost of hydrogen production from solid oxide electrolysis cells (SOEC) updated the hydrogen production baseline to \$4.21/gge (Strategic Analysis)
Documentation, Limitations, Methodology, Validation, and Verification	

Program	Hydrogen and Fuel Cell Technologies				
Performance Goal (Measure)	Hydrogen and Fuel Cell Technology - Fuel Cell Power - Improve the catalyst specific power of fuel cells, as measured in kilowatts, kW, per gram of platinum group metal.				
Fiscal Year	2011	2012	2013	2014	2015
Target	5.5 kW per gram of platinum group metal	5.8 kW per gram of platinum group metal	5.9 kW per gram of platinum group metal	6.3 kW per gram of platinum group metal	6.5 kW per gram
Result	Exceeded - 5.6	Met - 5.8	Exceeded - 6	Met - 6.3	Exceeded - 6.6
Endpoint Target	8 kW/g by 2017 \$30/kW fuel cell system cost target				
Commentary on 2015 Results (Action Plan if Not Met)	The Q4 milestone was met ahead of schedule in Q2. A best of class MEA prepared by 3M demonstrated average catalyst specific power of 6.6 kW/g while satisfying the heat rejection criterion of 1.45 kW/C. This MEA contained a nanostructured thin film (NSTF) anode based on PtCoMn catalyst, with 0.02mgPt/cm ² . The NSTF cathode was based on dealloyed Pt3Ni7 catalyst at a loading of 0.106mgPt/cm ² . The total MEA PGM areal loading was 0.126mg/cm ² , and the active area was 50 cm ² .				
Documentation, Limitations, Methodology, Validation, and Verification					

Solar Energy

The DOE SunShot Initiative is a collaborative national effort to make the U.S. a leader in the global clean energy race by accelerating solar energy technology development. The DOE SunShot Initiative will enable widespread, large-scale adoption of solar power technologies across America by making solar energy systems cost-competitive with other forms of energy by the end of the decade

Program	Solar Energy				
Performance Goal (Measure)	Solar - Concentrated Solar Power (CSP) - Reduce the levelized cost of Concentrated Solar Power energy at utility scale (cents / kilowatt hour, kWh)				
Fiscal Year	2011	2012	2013	2014	2015
Target	16 cents/kWh	19 cents/kWh (range 18-20)	18 cents/kWh (range 17-19)	15 cents/kWh	13 cents/kWh
Result	Exceeded - 11	Exceeded - 18.5	Exceeded - 14.4	Exceeded - 14	Exceeded - 12.9
Endpoint Target	6 cent /kWh by 2020, cost competitive with traditional electricity sources				
Commentary on 2015 Results (Action Plan if Not Met)	Current CSP benchmark is 12.9 cents/kWh, using the SAM model for a 100 MW Molten Salt Tower with 10 hours of storage, a 56.1% capacity factor, and a capital cost of \$6,885/kW				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Solar Energy				
Performance Goal (Measure)	Solar - Deployment - Installed capacity of solar in the US (gigawatts, GW)				
Fiscal Year	2011	2012	2013	2014	2015
Target	3 GW installed	5 GW installed	7 GW installed	9 GW installed	23 gigawatts
Result	Exceeded - 3.1	Met - 5	Exceeded - 8.8	Met - 16	Exceeded - 25
Endpoint Target	120 GW by 2020, 300 GW by 2030				
Commentary on 2015 Results (Action Plan if Not Met)	As of 6/30/15 there was 21 GW of installed PV systems and 1.7 GW of CSP. SEIA/GTM projects 7.7GW of PV to be installed in CY2015, translating into 5GW in H2 2015. Assuming 40% of this is installed in FY Q415 then 23GW of PV has been installed and 25 GW of solar. (SEIA & GTM, U.S. Solar Market Insight Q2 2015, September 2015).				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Solar Energy				
Performance Goal (Measure)	Solar - Photovoltaic (PV) - Reduce the levelized cost of Solar PV energy at utility scale (cents / kilowatt hour, kWh)				
Fiscal Year	2011	2012	2013	2014	2015
Target	20 cents/kWh (range 8 - 20)	17 cents/kWh (range 13 – 17)	15 cents/kWh (range 13 – 17)	13 cents/kWh	10 cents per kwh
Result	Met - 17	Met - 16	Met - 15	Exceeded - 11	Met - 10
Endpoint Target	6 cents /kWh by 2020, cost competitive with traditional electricity sources				
Commentary on 2015 Results (Action Plan if Not Met)	The recently published report, "Technology Advances Needed for Photovoltaics to Achieve Widespread Grid Price Parity" by Michael Woodhouse of NREL and Rebecca Jones-Albertus of the DOE, reports utility-scale PV LCOE ranging from 8.0—13.1/kWh (Fixed Tilt) and 6.9—12.1 1-Axis Tracking				
Documentation, Limitations, Methodology, Validation, and Verification					

Water Power

The Water Power Program supports research, development, demonstration, and deployment (RDD&D) in two distinct renewable power domains: (1) Hydropower and (2) Marine and Hydrokinetic (MHK) energy.

Program	Water Power				
Performance Goal (Measure)	Water - Marine & Hydrokinetic (MHK) - Reduce the cost of energy from Marine & Hydrokinetic technologies 2011 - 2013: Test marine and hydrokinetic devices and components to determine baseline cost, performance, and reliability. (all targets cumulative)				
Fiscal Year	2011	2012	2013	2014	2015
Target	2 MHK devices tested	3 MHK devices tested	10 MHK devices tested	0.6 LCOE TBD - end of FY2013	50 percentage
Result	Met - 2	Met - 3	Met - 10	Exceeded - 0.53	Met - 50
Endpoint Target	Competitive with local coastal hurdle rates by 2030				
Commentary on 2015 Results (Action Plan if Not Met)	The 2015 goal of achieving a power to weight ratio (PWR) of 0.375 kW/ton for wave energy conversion technologies was realized through R&D projects that were funded by the DOE Water Power Program. Specifically, recent DOE funded concept studies show that using advanced composite materials has the potential to achieve PWRs higher than 0.4 kW/ton, easily surpassing the 2015 GPRA goal. The Program is continuing to fund work in this area in 2016 and 2017 by supporting the open water tests of near full-scale device prototypes. Results from these tests will be used to validate the predicted PWR for devices that utilize advanced composite materials."				

Wind Energy

The mission of the Wind Energy Program is to accelerate the widespread U.S. deployment of clean, affordable, and reliable wind power to promote energy security, economic growth, and environmental quality

Program	Wind Energy				
Performance Goal (Measure)	Wind - Offshore - Cost of fixed-bottom off-shore wind energy (cents/kWh)				
Fiscal Year	2011	2012	2013	2014	2015
Target	26.8 cents/kWh	22.5 cents/kWh	20.4 cents/kWh	20 cents/kWh	19.53 cents per kwh
Result	Exceeded - 22.5	Met - 22.5	Met - 20.4	Exceeded - 18.8	Not Met - 20.9
Endpoint Target	16.7 cents/kWh by 2020 using a 7% discount rate.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>The FY15 Offshore Wind Cost of Energy was estimated at 20.9 cents/kWh. With an equivalent 2014 dollar year and when applying representative US project financing terms rather than a fixed 7% real discount rate, costs of 19.3 cents/kWh are estimated. When adjusting for aggregate economy wide inflation (to the year in which the baseline values and targets were established) costs are estimated at 19.9 cents per kWh in 2011 dollars, with a fixed 7% real discount rate.</p> <p>Action Plan: Wind and Water will report all LCOE targets in real terms (2010 dollars). If Offshore Wind LCOE is not held to a 7% discount rate and is modeled using market averages, the cost of Offshore Wind energy would be 17.7 cents/kWh (2010 dollars), surpassing the stated goal of 18.5 cents/kWh (2010 dollars). The wind program has historically expressed LCOE in nominal terms (including inflation). OMB gave specific guidance that the FY17 CBJ metrics table should be expressed in only real or nominal terms. Given this guidance, the Wind program has adopted the policy to express LCOE in real terms (2010 dollars) since the end point targets were developed in 2010.</p> <p>*Note: On an annual basis, the Wind program collects empirical market data and provides a non-biased leveled cost of electricity. The Offshore Wind LCOE In 2015 was high due to circumstances in the European industry (the basis for our calculation). European Offshore Wind experienced much higher than average costs due to a number of offshore wind installations at deeper and much further from shore sites. This cost trend is expected to be reversed in the coming year.</p>				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Wind Energy				
Performance Goal (Measure)	Wind - Onshore - Cost of land-based wind energy (cents/kWh) 2008 - 2012: measure for modeled reduction in cents/kWh; 2012+ are survey results.				
Fiscal Year	2011	2012	2013	2014	2015
Target	0.1 cents/kWh reduction	8 cents/kwh	7.7 cents/kWh	7.2 cents/kWh	6.7
Result	Met - 0.1	Met - 8	Met - 7.7	Met - 6.9	Not Met - 6.8
Endpoint Target	5.7 cents/kWh by 2020 using a 7% discount rate				
Commentary on 2015 Results (Action Plan if Not Met)	<p>The FY15 Land-based Cost of Energy was estimated at 6.8 cents/kWh, just above the targeted 6.7 cents/kWh. With an equivalent 2014 dollar year and when applying weighted average market derived financing terms rather than a fixed 7% real discount rate as stipulated by EERE, costs of 6.5 cents/kWh are estimated. In addition, when adjusting for aggregate economy wide inflation (to the year in which the baseline values and targets were established) costs are estimated at 6.3 cents per kWh in 2010 dollars, even with a fixed 7% real discount rate.</p> <p>Action Plan: Required action was completed as of the submission of FY17 CBJ (2/3/2016). The wind program has historically expressed LCOE in nominal terms (including inflation). OMB gave specific guidance that the FY17 CBJ metrics table should be expressed in only real or nominal terms. Given this guidance, the Wind program has adopted the policy to express LCOE in real terms (2010 dollars) since the end point targets were developed in 2010.</p> <p>*Note: With the program's new policy, the FY15 Land Based Wind LCOE would be 6.3 cents/kWh (2010 dollars) which would be .1 cents/kWh less expensive than the 6.4 cents/kWh (2010 dollars) target. This would require no action plan.</p>				
Documentation, Limitations, Methodology, Validation, and Verification					

Advanced Manufacturing Office

Reduce the energy intensity and life-cycle energy consumption of manufactured products by researching, developing, and demonstrating energy-efficient manufacturing processes and materials. Promote continuous improvement in energy efficiency among existing facilities and manufacturers. Our goal is to reduce energy consumption of manufactured goods across product life-cycles by 50 percent over 10 years.

Program	Advanced Manufacturing Office
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Performance Goal (Measure)	AMO - Advanced Manufacturing R&D Projects - Advanced Manufacturing R&D Projects - Demonstrate new manufacturing process technologies capable of reducing energy consumption by at least 25% compared to current industrial processes (annual number of new manufacturing processes). 2012: increase the build speed of metal components and strength of polymer components. 7 ksi.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	1 manufacturing process	2 manufacturing processes	2 manufacturing processes	2 processes
Result		Met - 1	Met - 2	Met - 2	Met - 2
Endpoint Target	Demonstrate 10 manufacturing processes on an industrially relevant scale by 2024, leading to energy savings and increased U.S. competitiveness.				
Commentary on 2015 Results (Action Plan if Not Met)	MET with 3 technologies. The Rapid Freeform Sheet Metal Forming (RAFFT) machine built by Ingersoll is a unique tool that employs a double-sided incremental forming process to form parts based on advanced computational model programmed toolpaths that eliminates stamping and forming dies. A novel hydrogen sintering near-net-shape titanium production process using low-cost powder metallurgy techniques was successfully developed. This process saves more than 25 percent of the energy used to make titanium parts by avoiding several high temperature melting and refining steps in the manufacturing process because near net shaped parts are made directly from sintered low cost powders. Cummins Power Generation demonstrated the operation of a 330 KWe CHP system suitable for “plug and play” installation in small industrial and commercial sites. With efficiency above 75%, this is one of the highest-efficiency CHP systems smaller than 1 MW in size.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Advanced Manufacturing Office				
Performance Goal (Measure)	AMO – Demonstration - Support clean manufacturing institute(s) to demonstrate advanced physical and virtual tools which optimize critical processes				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	1 tools	1	2 Institutes
Result			Met - 1	Met - 1	Met - 2
Endpoint Target	9 demonstration facilities by 2017.				

Commentary on 2015 Results (Action Plan if Not Met)	IACMI is a fully functional Institute with the Cooperative Agreement signed in June 2015. The Institute makes solid progress toward operational and technical milestones and is preparing for the second budget period of activity to commence Jan 01, 2016.
Documentation, Limitations, Methodology, Validation, and Verification	

Building Technologies

EERE's Building Technologies Program will continue to develop and demonstrate advanced building efficiency technologies and practices to make buildings in the U.S. more efficient, affordable, and comfortable

Program	Building Technologies				
Performance Goal (Measure)	Buildings - Lighting - Decrease the manufacturing cost of a warm white LED package. (Lumens / \$) 2012: Increase lighting efficacy of "warm white light" solid-state lighting in a lab device. 2008-2011 unit was "non-warm white light"				
Fiscal Year	2011	2012	2013	2014	2015
Target	142 lumens per watt of "non-warm white light"	127 lumens per watt of "warm white light"	148 lumens per watt of "warm white light"	128 lumens	114 dollars per lumens
Result	Exceeded - 149	Exceeded - 133.1	Met - 148	Exceeded - 150	Exceeded - 176
Endpoint Target	217 lm/\$ by 2020				
Commentary on 2015 Results (Action Plan if Not Met)	Exceeded the 144 lm/\$ goal by reaching 176 lm/\$				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Building Technologies				
Performance Goal (Measure)	Buildings - Standards - Final Rules - Annual number of products for which final rules for test procedures and standards will be issued,				
Fiscal Year	2011	2012	2013	2014	2015
Target	16 products	17 products	31 products	13 products	N/A
Result	Met - 16	Exceeded - 29	Not Met - 19	Exceeded - 16	Exceeded

Endpoint Target	Reduce cumulative carbon pollution by 3 billion metric tons by 2030 through standards set since 2009 and promulgate new standards for consumer products and industrial equipment by the end of calendar year 2016.
Commentary on 2015 Results (Action Plan if Not Met)	N/A
Documentation, Limitations, Methodology, Validation, and Verification	

Vehicle Technologies

Aligning with the President's Climate Action Plan and all-of-the-above approach to American energy, the Vehicle Technologies Program supports a broad technology portfolio; adheres to a comprehensive and analysis-based strategy of research, development, demonstration, and deployment activities; and creates strategic public-private partnerships to develop new technologies and move them from the laboratory onto the road.

Program	Vehicle Technologies				
Performance Goal (Measure)	Vehicles - Batteries - Reduce the modeled cost of energy storage for Plug-In Hybrid Electric Vehicles (PHEVs). (\$/kilowatt hours, kWh) 2008 – 2010: Measure for modeled production cost of a high-power, 25-kW passenger vehicle lithium-ion battery				
Fiscal Year	2011	2012	2013	2014	2015
Target	700 \$/kWh	500 \$/kWh	400 \$/kWh	300 \$/kWh	275 Dollars
Result	Exceeded - 651	Exceeded - 485	Exceeded - 325	Met - 289	Exceeded - 268
Endpoint Target	\$125/kWh by 2022				
Commentary on 2015 Results (Action Plan if Not Met)	The September 2015 target was met. The current cost estimates from three DOE-funded battery developers for an EV battery with a 200-mile range average \$268 per kilowatt-hour of useable energy. This cost projection is derived using material costs and cell and pack designs provided by the developers. Those are then input into either ANL's peer reviewed and publically available Battery Production and Cost model (BatPaC), or the USABC cost model; the cost is based on a production volume of 100,000 batteries per year. The battery cost is derived for batteries that meet DOE/USABC performance targets, including the 1000 cycle life requirement. The battery development projects focus on high voltage and high capacity cathodes, advanced alloy anodes (including Silicon nanowires), and processing improvements. Proprietary details of the material and cell inputs and cost models are available in spreadsheet form and in quarterly reports.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Vehicle Technologies				
Performance Goal (Measure)	Vehicles - Electric Drive - Reduce the cost of electric-drive technologies (\$/kilowatt, kW, peak power)				
Fiscal Year	2011	2012	2013	2014	2015
Target	18 \$/kilowatt peak power	17 \$/kilowatt peak power	16 \$/kilowatt peak power	15 \$/kilowatt peak power	12 Dollars per kwh
Result	Met - 18	Met - 17	Met - 16	Met - 15	Met - 12
Endpoint Target	\$12/kW by 2015 and \$8/kW by 2020				
Commentary on 2015 Results (Action Plan if Not Met)	The September 2015 target was met. Component testing, simulation, and modeling of inverter and motor designs innovations met the Electric Drive Technologies \$12/kW target. Successful achievement of this high volume cost target is based on Delphi's recent accomplishments with its advanced High Temperature Inverter and Integrated Controller along with ORNL's innovative synchronous reluctance non-rare earth motor. These results will be included in the EDT FY 2015 Annual Report.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Vehicle Technologies				
Performance Goal (Measure)	Vehicles - Petroleum Use - Reduce the use of petroleum through the adoption of alternative fuel vehicles and infrastructure (million gallons per year)				
Fiscal Year	2011	2012	2013	2014	2015
Target	570 million gallons per year	700 million gallons per year	775 million gallons per year	850 million gallons per year	1.15 gallons per year
Result	Exceeded - 600	Exceeded - 750	Exceeded - 820	Met - 850	Met - 1.15
Endpoint Target	By 2015, 1B gal/yr. (gge) of petroleum reduction with alternative fuel vehicles and infrastructure. By 2020, 2.5B gal/yr. (gge) of petroleum reduction with alternative fuel vehicles and infrastructure.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual progress reports were submitted by nearly 100 Clean Cities coalitions to document vehicle deployment activities and project results for the 2014 calendar year. This data was analyzed, verified, and rolled up with other program metrics into an annual report for the national program. Patterns and trends were identified to estimate petroleum/emission reduction impacts for 2015. <ul style="list-style-type: none"> - Coalition reported impacts = .77B - Impact from National Lab activities/projects = .32B - Impact from National Clean Fleet partner projects and activities = .06B 				

	Total Petroleum Reduction estimate for 2015 = 1.15B gallons				
Documentation, Limitations, Methodology, Validation, and Verification					
Program	Vehicle Technologies				
Performance Goal (Measure)	Vehicles - Powertrain - Improved fuel economy from advances in engine efficiency (% passenger vehicle/commercial vehicle) 2008 - 2010: measure for % engine efficiency improvement demonstrated				
Fiscal Year	2011	2012	2013	2014	2015
Target	10 % passenger vehicles, 5% commercial	15 % passenger vehicles, 10% commercial	20 % passenger vehicles, 15% commercial	23 % passenger vehicles, 18% commercial	25 Percentage
Result	Met - 10	Met - 15	Met - 20	Met - 23	Met - 25
Endpoint Target	by 2015, 25% improved fuel economy for passenger vehicles & 20% for commercial vehicles				
Commentary on 2015 Results (Action Plan if Not Met)	ORNL made use of the gasoline and diesel fuel reactivity controlled compression ignition (RCCI) engine map completed for the Q3 milestone to model the potential fuel economy improvement with RCCI compared to a 2009 port fuel injection (PFI) gasoline engine on the same vehicle platform. All simulations were carried out in Autonomie using a 1580 kg passenger vehicle (mid-size sedan i.e. Chevrolet Malibu) over numerous U.S. federal light-duty drive cycles. An engine map for a 2.7 L 2009 PFI gasoline engine was selected as the baseline and the production map was obtained from an OEM partner for use in the vehicle simulations. Vehicle systems simulation results showed a greater than 25% increase in combined cycle fuel economy on a gasoline equivalent basis was made possible with the multi-mode RCCI operating strategy as compared to the 2.7L 2009 PFI baseline on the same simulated vehicle with equivalent performance. ANL utilized an engine map for its Gasoline Compression Ignition (GCI) engine in Autonomie to model fuel economy improvement. The GCI engine enabled greater than 25% fuel economy improvement compared to a PFI baseline vehicle.				
Documentation, Limitations, Methodology, Validation, and Verification					

Electricity Delivery and Energy Reliability

Electricity Delivery and Energy Reliability

The Office of Electricity Delivery and Energy Reliability (OE) leads national efforts to modernize the electric grid, enhance security and reliability of energy infrastructure, and facilitate recovery from disruptions to the energy supply.

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	Cyber Security - Demonstrate new protective measures to reduce risks from cyber incidents.				
Fiscal Year	2011	2012	2013	2014	2015
Target	2 number of control systems tested	1 Conduct a power system control component study	1 1 energy delivery field device	1 1 substation control system component	Demonstrate a tool that designs-in enhanced communications security between control centers
Result	Met - 2	Met - 1	Met - 1	Met - 1	Met - 1
Endpoint Target	By 2020, resilient energy systems are designed, installed, operated and maintained to survive a cyber incident while sustaining critical functions.				
Commentary on 2015 Results (Action Plan if Not Met)	Target has been met by several projects, namely, 1. TCIPG award #OE000097 sub-projects ""GridStat Middleware Communication Framework: Management Security and Trust"" and ""Functional Security Enhancements for Existing SCADA Systems"". 2. Grid Protection Alliance award #OE0000536 ""Secure Information Exchange for Electric Grid Operations"". 3. VIASAT award #OE0000675 ""Cyber-Intrusion Auto-Response Policy and Management System (CAPMS)"". 4. Pacific Northwest National Laboratory award #M614000372 ""Facilitate Security ICCP Rollout"".				
Documentation, Limitations, Methodology, Validation, and Verification	Demonstrations were provided and content was prepared/preserved showing how this milestone was achieved.				

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	Energy Storage - Lower the cost of grid-scale (>1 mw) energy storage technologies.				
Fiscal Year	2011	2012	2013	2014	2015
Target	2,500 \$/kW for grid-scale application	560 \$/kWh for a 4 hour system	475 \$/kWh for a 4 hour system	400 \$/kWh for a 4 hour system	325 \$/kWh

Result	Met - 2,500	Met - 500	Met - 475	Met - 400	Met - 325
Endpoint Target	By 2020 improve cost-benefit ratio of storage to compete with current peak generation resources and increase commercial use of grid scale storage to buffer renewable to 5%.				
Commentary on 2015 Results (Action Plan if Not Met)	Based on the results achieved in FY15, the system cost for a commercial 1MW/4MWh redox flow battery system is projected to be < \$325/kWh.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	Infrastructure Security and Energy Restoration - Improve data set and performance of near real-time monitoring situational awareness tool, measured by situational awareness capability index (SACI). System created is EAGLE-I (Environment for Analysis of Geo-Located Energy Information). Note: SACI represents the completeness of situational awareness data, measured as a percentage of available data incorporated into situational awareness tool. Available data increases in the future as more becomes available.				
Fiscal Year	2011	2012	2013	2014	2015
Target	1 milestone for a mitigation strategy document	10 % SAIC performance	30 % situational awareness capability index score	45 % situational awareness capability index score	60 %
Result	Met - 1	Met - 10	Met - 30	Met - 45	Met - 60
Endpoint Target	Maintain greater than 90% SACI by FY2017 to help improve capacity to mitigate effects of disruptions and recovery quickly.				
Commentary on 2015 Results (Action Plan if Not Met)	Met 60% situational awareness capability index score				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	National Electricity Delivery - Number of states to which the program provides, upon request, assistance in designing and implementing electricity policies, statutes and regulations.				
Fiscal Year	2011	2012	2013	2014	2015

Target	30 states assisted	30 states/tribes assisted	35 states/tribes assisted	35 states/tribes assisted	40 states and tribes assisted
Result	Met - 30	Met - 30	Met - 35	Met - 35	Met - 40
Endpoint Target	Increased access to reliable, affordable and sustainable energy sources.				
Commentary on 2015 Results (Action Plan if Not Met)	Provided technical assistance to 40 states and tribes				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	R&D Advanced Modeling - Development of capabilities in understanding, modeling and predicting grid behavior.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	1 Develop draft roadmap	1 final roadmap developed	1 Demonstrate (at laboratory scale) fast state estimation	Demonstrate (at laboratory scale) high-performance dynamic simulation capability for assessing potentially destabilizing events
Result		Not Met - 0	Met - 1	Met - 1	Met - 1
Endpoint Target	Realization of advanced modeling capabilities, including dynamic operation, real-time analysis, and predictive response.				
Commentary on 2015 Results (Action Plan if Not Met)	Demonstrated (at laboratory scale) high-performance dynamic simulation capability for assessing potentially destabilizing events				
Documentation, Limitations, Methodology, Validation, and Verification	annual report from PNNL				

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	Smart Grid R&D - Reductions in load factor (LF), duration of outages (SAIDI) on the distribution system, and outage time of critical loads on smart microgrids (CL)				
Fiscal Year	2011	2012	2013	2014	2015

Target	10 % load factor improvement on a distribution feeder circuit	12 % load factor improvement on a distribution feeder circuit	1 Demonstrate a smart microgrid at a military facility with no mission-impacting power interruption	1 Demonstrate an operational prototype of a smart microgrid including integration of electric vehicles and renewable energy	Complete development of a prototype Microgrid Design Toolset (MDT) that is used by at least one A&E firm for microgrid design analysis.
Result	Met - 10	Met - 12	Met - 1	Met - 1	Met - 1
Endpoint Target	Achievement of a self-healing distribution grid that allows for widespread integration of demand response, distributed generation and plug-in electric vehicles by 2020.				
Commentary on 2015 Results (Action Plan if Not Met)	Completed. The beta version of the MDT was released, along with extensive documentation of the user's guide, technical architecture, and case study. These documents were sent to all MDT EAB members				
Documentation, Limitations, Methodology, Validation, and Verification	<ul style="list-style-type: none"> • MDT Toolkit User Guide Software (SAND 2014-8593 0) • MDT Technical Documentation and Component Summaries (SAND 2015-8849) • Microgrid Design Toolkit (MDT) Simple Use Case Example for Islanded Mode Optimization (SAND2015-8720 TR) 				

Program	Electricity Delivery and Energy Reliability				
Performance Goal (Measure)	Transmission Reliability - Demonstrate and implement technologies and tools that improve the monitoring of transmission system health and the ability of operators to respond quickly and effectively to address issues.				
Fiscal Year	2011	2012	2013	2014	2015
Target	5 control centers with electro-mechanical grid stability alarms implemented	1 milestone for a prototype distributed dynamic state estimator	1 Demonstrate a pre-prototype adaptive relaying system based on real-time synchrophasor data	1 Develop a prototype wide-area synchrophasor-based voltage stability tool	Demonstrate an open-source, synchrophasor-based tool that can be used for demonstrating compliance with the frequency response requirements contained NERC Std BAL-003.

Result	Not Met - 2	Met - 1	Met - 1	Met - 1	Met - 1
Endpoint Target	Realization of a nationwide synchrophasor network with 100% sensor coverage of the transmission system by 2020, allowing for complete, real-time monitoring of transmission system health.				
Commentary on 2015 Results (Action Plan if Not Met)	Demonstrated an open-source, synchrophasor-based tool that can be used for demonstrating compliance with the frequency response requirements contained NERC Std BAL-003. Tool can be accessed at https://svn.pnl.gov/FRTTool .				
Documentation, Limitations, Methodology, Validation, and Verification					

Fossil Energy

Fossil Energy R&D

The Coal Program will ensure the availability of near-zero atmospheric emissions, abundant, affordable, domestic energy to fuel economic prosperity, strengthen energy security, and enhance environmental quality.

Program	Fossil Energy R&D				
Performance Goal (Measure)	CCS Demonstrations - Initiate construction of CCS demonstration projects. Once constructed, initiate operation.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	3 CCS Demonstrations initiated	2 CCS project initiated	1 CCS demonstration project initiated	1 CCS Demonstration project
Result		Met - 3	Met - 2	Met - 1	Not Met - 0
Endpoint Target	Operations initiated at a minimum of five commercial scale CCS demonstrations by 2019 including the Clean Coal Power Initiative (CCPI), FutureGen 2.0, and the Industrial CCS Demonstration projects (funded by both annual appropriations and the American Recovery and Reinvestment Act). At least two of the five demonstrations to initiate operations by 2019 will be CCPI projects.				
Commentary on 2015 Results (Action Plan if Not Met)	Construction was not initiated on at least one CCS Demonstration Project. The Summit Texas Clean Energy Project (TCEP) was planning to reach financial close and initiate construction by the end of the fourth quarter of fiscal year 2015. However, the project has not been successful in reaching financial close, and therefore, it has not initiated construction. Action Plan: The Summit Texas Clean Energy Project (TCEP) continues to negotiate price and terms with various contractors and suppliers in order to achieve financial close. If financial close can be achieved, construction will be initiated.				

	During fiscal year 2015, two CCS Demonstrations were ended due to progress toward project milestones leaving fewer projects to achieve the Endpoint Target.
Documentation, Limitations, Methodology, Validation, and Verification	Data sources include monthly reporting and weekly discussions with project participants.

Program	Fossil Energy R&D				
Performance Goal (Measure)	Carbon Capture and Advanced Energy Systems - Achieving the target signifies that the Carbon Capture & Advanced Energy Systems programs are continuing to make progress in meeting the goal of developing cost-effective, reliable carbon capture technologies for pre-combustion, post-combustion, and oxy-combustion capture applications.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	< 55 \$ per tonne CO2 captured	≤ 53 \$ per tonne CO2 captured	51 dollars per tonne of CO2
Result			Met - 53	Met - 53	Met - 51
Endpoint Target	By 2020, Advanced Energy Systems with a CO2 capture cost of no more than \$40 per tonne.				
Commentary on 2015 Results (Action Plan if Not Met)	Engineering, systems, and cost analysis show that, when integrated together into a pulverized coal (PC) power plant with post-combustion capture, technology advancements in the Carbon Capture and Advanced Energy Systems program area provide a pathway to achieve a cost of capture less than \$51 per tonne of CO2. R&D progress in post-combustion capture solvent development (Linde LLC), absorber process design (Linde LLC), and advanced heat integration (Southern Company Services, Inc./Mitsubishi Heavy Industries, Ltd.) provided the basis for this year's independent assessment.				
Documentation, Limitations, Methodology, Validation, and Verification	The analysis supporting the validation of the annual performance measure is documented in the FY 2015 Coal Program GPRA Annual Report.				

Program	Fossil Energy R&D				
Performance Goal (Measure)	Carbon Storage - Inject CO2 in large-volume field test sites to demonstrate the formations' capacity to permanently, economically, and safely store carbon dioxide.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	3 MMTs injected (since 2009)	4 MMTs injected (since 2009)	5 MMTs injected (since 2009)	6 MMTs injected (since 2009)
Result		Met - 3.6	Met - 4.7	Met - 7.6	Met - 8.9

Endpoint Target	Inject 9.0 million metric tons of CO ₂ in large-volume field test sites representing different storage classes, since January 2009, to demonstrate and monitor for the formations' capacity to permanently, economically, and safely store carbon dioxide. A long-term goal is to ensure the cost effective ability to ensure 99 percent storage permanence of CO ₂ while minimizing the environmental footprint of carbon storage activities.
Commentary on 2015 Results (Action Plan if Not Met)	The performance measure was met with 8,871,340 metric tons of CO ₂ injected at large-volume field projects conducted by the Southeast Regional Carbon Sequestration Partnership (SECARB), the Midwest Carbon Sequestration Consortium (MCSC), the Midwest Regional Carbon Sequestration Partnership (MRCSP), the Southwest Regional Carbon Sequestration Partnership (SWP), and the Plains CO ₂ Reduction (PCOR) Partnership.
Documentation, Limitations, Methodology, Validation, and Verification	<p>SECARB (DE-FC26-05NT42590): The monthly report for January 2015 indicates an injection volume of 5,371,643 metric tons for the Cranfield Project. However, 627,744 metric tons are credited to the Phase II injection volumes, so a total of 4,743,898 metric tons were injected as part of Phase III. Injection volumes for the Citronelle Project are also documented in monthly reports. The monthly report for September 2014 indicates that 114,104 metric tons were injected into the Paluxy Formation. There was no further injection of CO₂ because the source of CO₂ (Plant Barry) was shut down. The decision from Denbury Resources to cease injection at both the Cranfield and Citronelle sites is documented in the February 2015 monthly report.</p> <p>MGSC (DE-FC26-05NT42588): The final injected volume of 999,215 metric tons was reported in the Quarterly Progress Report (September 18, 2014 – December 17, 2014) submitted by the Illinois State Geological Survey.</p> <p>MRCSP (DE-FC26-05NT42589): MRCSP reports injection volumes obtained from the field on a monthly basis. Quarterly progress reports also provide injection amounts.</p> <p>SWP (DE-FC26-05NT42591): SWP has reported monthly injection volumes through July 31, 2015, via a letter from Robert Balch and Brian McPherson, SWP Principal Investigators, to the NETL federal project manager.</p> <p>PCOR (DE-FC26-05NT42592): PCOR has reported monthly injection volumes up through April 30, 2015, via a letter from Charles D. Gorecki, PCOR Principal Investigator, to the NETL federal project manager.</p>

Petroleum Reserves

The Strategic Petroleum Reserve (SPR) protects the U.S. from future disruptions in critical petroleum supplies and meets the U.S. obligations under the International Energy Program (Energy Policy and Conservation Act, P.L. 94-163, as amended, Section 151). SPR also includes Defense Department crude oil, stored for national defense purposes.

Program	Petroleum Reserves
Performance Goal (Measure)	Drawdown Readiness - Ensure drawdown readiness by achieving greater than 95% of monthly maintenance and accessibility goals.

Fiscal Year	2011	2012	2013	2014	2015
Target	95 % of monthly maintenance achieved	> 95 % of monthly maintenance achieved	95 % of monthly maintenance achieved	≥ 95 % of monthly maintenance achieved	≥ 95 % of monthly maintenance achieved
Result	Met - 98	Met - 95.98	Met - 96.45	Met - 96.8	Met - 97.6
Endpoint Target	Achieve 95% of monthly maintenance and accessibility goals in all years.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved target for FY 2015.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Petroleum Reserves				
Performance Goal (Measure)	SPR Operating Cost - Ensure cost efficiency of SPR operations by achieving low operating cost per barrel of capacity				
Fiscal Year	2011	2012	2013	2014	2015
Target	< 0.229 \$ operating cost per barrel	< 0.225 \$ operating cost per barrel	< 0.25 \$ operating cost per barrel	< 0.25 \$ operating cost per barrel	< 0.25 \$ operating cost per barrel
Result	Met - 0.224	Met - 0.221	Met - 0.239	Met - 0.239	Met - 0.233
Endpoint Target	Achieve < \$0.25 operating cost per barrel.				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved target for FY 2015.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Petroleum Reserves				
Performance Goal (Measure)	Sustained (90 day) Drawdown Rate - Enable ready distribution of SPR oil by achieving maximum sustained (90 day) drawdown rate of 4.4 million barrels per day.				
Fiscal Year	2011	2012	2013	2014	2015
Target	4.4 million barrels per day	≥ 4.4 million barrels per day	4.25 MMB/Day drawdown readiness rate	4.25 MMB/Day drawdown readiness rate	4.25 MMB/Day drawdown readiness rate

Result	Met - 4.4	Not Met - 4.25	Met - 4.25	Met - 4.25	Met - 4.25
Endpoint Target	Maintain a 90 day drawdown rate of 4.4 million barrels per day				
Commentary on 2015 Results (Action Plan if Not Met)	Achieved target for FY 2015. Due to a damaged internal floating roof on a tank at Bryan Mound, the maximum Bryan Mound site drawdown rate is reduced by approximately 150,000 barrels per day, which reduces the drawdown rate from 4.4 million barrels per day to 4.25 million barrels per day.				
Documentation, Limitations, Methodology, Validation, and Verification					

Nuclear Energy

New Nuclear Generation Technologies

The mission of the Reactor Concepts Research, Development and Demonstration (RD&D) program is to develop new and advanced reactor designs and technologies that advance the state of reactor technology to improve its competitiveness, and help advance nuclear power as a resource capable of meeting the Nation's energy, environmental, and national security needs.

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	ART Activities - Complete 90% of annual program milestones to support the development of innovative reactor technologies that may offer improved safety, functionality and affordability, and build upon existing nuclear technology and operating experience.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	90 % of annual program milestones met	90 % of annual program milestones met	90 % of annual program milestones met	≥ 90 percent
Result		Met - 90	Met - 100	Not Met - 88	Met - 91
Endpoint Target	ARC performance endpoints range from the mid-term (2030s) to very long term. ARC is focused on high value research for long term concepts, R&D needs of promising mid-range concepts, and development of innovative technologies that benefit multiple concepts and stimulation of new ideas for transformational future concepts.				
Commentary on 2015 Results (Action Plan if Not Met)	The Advanced Reactor Technologies Program completed milestones have helped to reduce uncertainty in the viability of several advanced reactor designs. This directly assists our industry partners in advancing toward commercialization. The work accomplished has also been used to leverage collaborations with international research bodies to accelerate progress in these areas. Regarding the three milestones that were not met, revised plans have been developed to ensure completion as early as possible in the next fiscal year. Impact of the delayed milestones is minimal in the near term, but ultimately they do impact the long-term schedule for reaching our objectives in those areas.				

Documentation, Limitations, Methodology, Validation, and Verification	ART FY 15 Performance Measure Memo; PICS-NE system.
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Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	Fuel Cycle R&D - Complete Fuel Cycle research and development activities that allow the FCR&D program to support the attainment of a sustainable fuel cycle.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	90 % of annual milestones completed	90 % of annual milestones met	≥ 90 % of annual milestones met	≥ 90 percent
Result		Met - 90	Met - 99	Met - 98	Met - 94
Endpoint Target	The R&D milestones represent progress toward several key fuel cycle outcomes. For the once-through cycle, qualify fuel for licensing in the 2030 timeframe and the feasibility of storage options in the 2040 timeframe. In addition, prove the feasibility of advanced waste forms for modified open cycle options and full recycle options in the 2050 to 2060 timeframe.				
Commentary on 2015 Results (Action Plan if Not Met)	The work accomplished in FY 2015 allows Fuel Cycle R&D to make progress towards its goal to demonstrate one or more light water reactor fuel concepts with enhanced accident tolerance in a commercial nuclear power plant and to conduct scientific research and technology development to enable storage, transportation, and disposal of used nuclear fuel and wastes generated by existing and future fuel cycles.				
Documentation, Limitations, Methodology, Validation, and Verification	FY15 FCR&D Performance Measure Memo; INL Document Management System (DMS).				

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	Light Water Reactor Sustainability - This program is developing the scientific basis to extend existing nuclear power plant operating life beyond the current 60 year limit. The scientific basis will assist the NRC in making life-extension regulatory decisions. For FY2012 and beyond the performance measure is to meet 90% of planned annual milestones.				
Fiscal Year	2011	2012	2013	2014	2015
Target	57 scheduled deliverables	90 % of annual milestones completed	90 % annual program milestones met	≥ 90 % annual program milestones met	≥ 90 percent annual program milestones met

Result	Met - 57	Met - 100	Met - 96	Met - 100	Met - 100
Endpoint Target	NE-developed tools and assessments will help establish the scientific bases for existing plants to receive license extensions from the NRC in the 2030 timeframe.				
Commentary on 2015 Results (Action Plan if Not Met)	Significant progress was made on studying aging plant structures important to safety, specifically concrete and cables. This work will be critical for long-term safe and economic plant operation. Some initial research was completed on control room modernization with a major new pilot plant project in this area starting in fiscal year 2016. The first industry application of the Risk Informed Safety Margin Characterization (RISMC) methodology was completed this year with more complex industry applications planned in upcoming years.				
Documentation, Limitations, Methodology, Validation, and Verification	LWRS FY15 Performance Measure Memo; PICS-NE system.				

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	NEET- Mod & Sim Hub - Complete 90% of annual program milestones to support the creation of a virtual reactor prototype for predictive simulation of Light Water Reactors by 2015				
Fiscal Year	2011	2012	2013	2014	2015
Target	1 milestones to create a prototype of a virtual reactor	90 % of annual program milestones completed	90 % annual milestones met	≥ 90 % annual milestones met	≥ 90 percent annual program milestones met
Result	Met - 1	Met - 95	Met - 91	Met - 100	Met - 100
Endpoint Target	The milestones represent annual progress toward the creation of a Light Water Reactor model by 2015 for use by industry to get more safe, clean, and reliable energy from nuclear power plants.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>This was an important year for CASL. During the course of the year, CASL completed its first 5-year Phase. The completion of the first phase was marked by the use of the CASL Virtual Environment for Reactor Applications (VERA) Core Simulator (CS) to simulate the neutronics, thermal hydraulics, and fuel performance for all 12 fuel cycles of the TVA Watts Bar #1 pressurized water reactor (PWR). This simulation included tracking the depletion and shuffling of the reactor's nuclear fuels.</p> <p>This year also saw the start of CASL's second phase. During this phase, CASL will build on the tools developed in the first phase and will broaden their applicability to other reactor types. CASL will also work to deepen their technical capabilities to address other important challenge problems. This broadening and deepening was demonstrated by CASL in 2015, when the Hub used the parts of the VERA tool set was used to conditions in small modular reactors (SMRs) and Boiling Water Reactors (BWR). CASL also make some significant progress on addressing specific challenge problems. This included accurately calculating a core-</p>				

	wide, pin-resolved simulation of the power shift caused by a CRUD build up during cycle 7 of the Watts Bar #1 reactor. Also, CASL used part of its VERA tool set to simulate the Pellet Clad Interface (PCI) issue.
Documentation, Limitations, Methodology, Validation, and Verification	Hub FY 15 Performance Measure Memo - see documentation section.

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	SMR - Licensing Technical Support Program - Enable the submission of license application documentation to the Nuclear Regulatory Commission (NRC) by SMR vendors and utility partners by supporting design, engineering, certification, and licensing efforts for selected SMR projects.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	1 complete program milestones	1 complete program milestones	1 complete program milestones	complete program milestones
Result		Not Met - 0	Met - 1	Not Met - 0	Met
Endpoint Target	DOE-provided support for design, engineering, and regulatory processes will help encourage and accelerate industry partner decisions to submit certification and licensing applications in the 2018 timeframe.				
Commentary on 2015 Results (Action Plan if Not Met)	The SMR Licensing Technical Support Program's FY15 accomplishments are evidence of the program's overall progress in supporting the commercial deployment of small modular reactors and its flexibility in adapting to changing market conditions that are not under the control of either the Office of Nuclear Energy or our industry partners. More specifically the accomplishments demonstrate coordination of design development with regulatory and customer requirements in order to achieve deployment of clean, affordable nuclear power options.				
Documentation, Limitations, Methodology, Validation, and Verification	Documentation for each quarterly FY15 milestone is available in NE SMR LTS Performance Measure memo, 10.02.15.				

Nuclear Infrastructure

The mission of the Idaho Facilities Management (IFM) program is to manage the planning, acquisition, operation, maintenance, and disposition of the Office of Nuclear Energy (NE)-owned facilities and capabilities at the Idaho National Laboratory (INL).

Program	Nuclear Infrastructure
Performance Goal (Measure)	Facility Availability - Idaho Facilities Management Program - Enable nuclear research and development activities by providing operational facilities and capabilities, as measured by availability percentages.

Fiscal Year	2011	2012	2013	2014	2015
Target	80 % availability	80 % availability	80 % availability	≥ 80 % availability	≥ 80 percent
Result	Not Met - 71.6	Not Met - 70.5	Not Met - 64.2	Not Met - 77	Not Met - 77
Endpoint Target	Maintain the percentage of facilities and capabilities that are available for research and development activities at 90% or better.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Major equipment issues have affected the ability of the reactor to meet its schedule and have negatively impacted research activities, which rely on irradiation in ATR. This highlights the need for ATR to accelerate the maintenance and/or refurbishment of ATR systems and equipment, in order to improve equipment reliability and increase confidence in the reactor's ability to meet its programmatic commitments to its customers, in a timely and cost effective manner.</p> <p>Early in FY15, MFC availability did not meet the 80% milestone because of equipment failures, lack of resources, and other operational issues. Research activities were impacted, including extended delays in restart of the Neutron Radiography Reactor (NRAD) and loss of the ability to utilize the AFCI glove box. However, BEA recovered from these events to mitigate research delays and impacts to customers. Throughout the year, increased focus from Idaho National Laboratory personnel for projects and operations and maintenance enabled MFC to meet its facility availability goal, and accomplish well over 80% of FY15 enabled outcomes on or ahead of schedule. MFC accomplished numerous FY15 programmatic milestones across all of its nuclear and radiological facilities, highlighting MFC's capabilities for National and Homeland Security, Fuel Cycle Research and Development, Idaho Facilities Management, High Performance Research Reactor Fuel Development, and external customers. These accomplishments have provided a springboard for programmatic work at MFC facilities in FY16.</p> <p>Action Plan: BEA has proposed a five-year strategic investment plan starting in FY17 for ATR leveraging both the Office of Nuclear Energy and the Naval Reactors programs. This strategic plan is intended to take the reactor to the next level, increasing reliability and availability. The plan prioritizes maintenance and refurbishment efforts specifically based on risk to plant availability. In addition, BEA is working with customers to revise irradiation plans and mitigate delays where possible.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by Alan L. Gunn, Acting Principal Deputy Manager for Nuclear Energy, dated October 7, 2015, providing performance information of IFM Facility Availability and IFM Line Item Construction Projects for the fourth quarter FY 2015.				

Program	Nuclear Infrastructure
Performance Goal (Measure)	Plant and Construction: Cost and Schedule Baseline Variance - Execute line item construction projects within approved cost profiles and schedules, using cost performance index and schedule performance index

	(using earned value measurement systems), with the green level maintaining indexes between 0.9 and 1.10, the yellow level between 0.8 and 1.20 and the red level less than 0.8 or greater than 1.20.				
Fiscal Year	2011	2012	2013	2014	2015
Target	80 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	80 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	80 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	≥ 80 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	≥ 80 percent of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15
Result	Met - 100	Met - 100	Met - 100	Not Met - 0.9	Met - 100
Endpoint Target	Maintain the total percentage of projects with good cost and schedule indexes at 90% or better.				
Commentary on 2015 Results (Action Plan if Not Met)	NE is tracking only one baselined project, Remote Handled Low Level Waste (RHLLW) Disposal Project. During the fiscal year, numerous issues were encountered with Areva's execution of the design-build contract that caused delays. However, BEA was actively engaged and took action by issuing two letters of concern to Areva's Sr. Vice President of Used Fuel and Waste Management and appointed a new project manager for the project and project director for project execution and implementation. The project delays were the result of realized risks associated with the design-build contract, which was identified in the project baseline. The Federal Project Director (FPD) believes that BEA took appropriate and timely actions to minimize the impacts based on the realized risks.				
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by Alan L. Gunn, Acting Principal Deputy Manager for Nuclear Energy, dated October 7, 2015, providing performance information of IFM Facility Availability and IFM Line Item Construction Projects for the fourth quarter FY 2015.				

Environmental Management

Tank Waste and Nuclear Materials

The EM program strategy is to work aggressively to reduce the footprint of our contaminated sites while bringing to bear the Department's formidable research and development assets to develop and deploy transformational technologies that will both accelerate and lower the cost to disposition the Department's highest curie materials that present high risk to public health and the environment.

Program	Tank Waste and Nuclear Materials				
Performance Goal (Measure)	Depleted uranium and uranium (DU&U) packaged for disposition - Number of metric tons of DU and U packaged in a form suitable for disposition				
Fiscal Year	2011	2012	2013	2014	2015

Target	N/A	37,046 metric tons of depleted and other uranium	56,901 metric tons of depleted and other uranium	68,730 metric tons	93,624 Metric Tons
Result		Not Met - 26,281	Not Met - 46,030	Not Met - 68,624	Not Met - 79,232
Endpoint Target	This metric has a life cycle estimate of 737,408 cubic meters.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>The EM program packaged for disposition a cumulative total of 79,232 metric tons of depleted and other uranium, 14,292 metric tons short of its target.</p> <p>Action Plan: The EM Program will evaluate its targets for FY 2016 to ensure the most safe and efficient operations of the Uranium Hexafluoride Conversion Facilities at both the Portsmouth and Paducah sites.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	<p>To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management Oversight and Assessments. EM also maintains a variety of sources for validation and verification of specific results for this metric the Daily Production Report, produced Depleted Uranium Hexafluoride Conversion Facilities for both the Portsmouth and Paducah sites.</p>				

Program	Tank Waste and Nuclear Materials				
Performance Goal (Measure)	High Level Waste Packaged for Disposition - Package for disposition a cumulative total of high level waste.				
Fiscal Year	2011	2012	2013	2014	2015
Target	3,571 canisters of high level waste	3,801 containers of high level waste	4,077 canisters of high level waste	4,153 canisters of high level waste	4,405 Number of Containers)
Result	Not Met - 3,526	Met - 3,802	Not Met - 4,028	Met - 4,154	Not Met - 4,241
Endpoint Target	This measure has a life cycle estimate of 24,054 canisters.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>At the end of FY 2015 the EM program packaged 4,241 canisters of high level waste, 164 canisters short of its target.</p> <p>Action Plan: The EM Program will adjust its FY 2016 target for this metric to accurately reflect the planned activities for the coming year for the FY 2017 Congressional Budget Request</p>				
Documentation, Limitations, Methodology, Validation, and Verification	<p>To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities</p>				

Safety Board, and the Department's Office of Project Management Oversight and Assessments. EM also maintains a variety of sources for validation and verification of specific results for this metric: shift reports from the DWPF.

Program	Tank Waste and Nuclear Materials				
Performance Goal (Measure)	Liquid Waste Eliminated (thousands of gallons) - Liquid Waste Eliminated (thousands of gallons)				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	5,684 thousands of gallons	6,993 thousands of gallons	7,343 thousands of gallons	7,592 Thousands of gallons
Result		Not Met - 5,340	Not Met - 6,133	Not Met - 6,592	Not Met - 6,862
Endpoint Target	This metric has a life cycle estimate of 90,814 thousands of gallons.				
Commentary on 2015 Results (Action Plan if Not Met)	At the end of FY 2015 the EM program eliminated a cumulative total of 6,862 thousands of gallon of liquid waste. Action Plan: The EM Program will adjust its FY 2016 target for this metric to reflect planned activities for the FY 2017 Congressional Budget Request.				
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management Oversight and Assessments.				

Program	Tank Waste and Nuclear Materials				
Performance Goal (Measure)	Liquid Waste Tanks Closed - Close a cumulative total of liquid waste tanks.				
Fiscal Year	2011	2012	2013	2014	2015
Target	9 tanks closed	15 tanks closed	11 tanks closed	13 tanks closed	15 Number of Tanks
Result	Met - 9	Not Met - 11	Met - 11	Met - 13	Not Met - 14
Endpoint Target	This metric has a life cycle estimate of 239 tanks closed.				
Commentary on 2015 Results (Action Plan if Not Met)	At the end of FY 2015 the EM Program closed a cumulative total of 14 tanks, one tank short of its target for FY 2015 from the Savannah River Site. Action Plan: At the Savannah River Site the Department plans to pre-treat the tank waste from the remaining tank not closed in FY 2015.				

Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management Oversight and Assessments.
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Waste Management

Program	Waste Management				
Performance Goal (Measure)	Legacy and Newly Generated LLW and Mixed LLW Disposed - Legacy and Newly Generated Low-Level Waste and Mixed Low-Level Waste Disposed (cubic meters)				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	1,224,799 cubic meters	1,253,146 cubic meters	1,298,854 cubic meters	1,305,096 cubic meter
Result		Met - 1,226,504	Met - 1,265,992	Not Met - 1,292,571	Met - 1,315,093
Endpoint Target	This metric has a life cycle estimate of 1,573,667 cubic meters disposed.				
Commentary on 2015 Results (Action Plan if Not Met)	At the end of the fourth quarter of FY 2015, the EM program disposed of a cumulative total of 1,315,093 cubic meters of legacy and newly generated low-level and mixed low-level waste, 9,997 cubic meters above its target for FY 2015.				
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management Oversight and Assessments. Shipping manifests for the transport of waste.				

Program	Waste Management				
Performance Goal (Measure)	TRU Waste Disposition - Disposition of a cumulative total of cubic meters of transuranic waste consisting of Remote Handled TRU and Contact Handled TRU.				
Fiscal Year	2011	2012	2013	2014	2015
Target	76,728 cubic meters of transuranic waste	80,502 cubic meters of transuranic waste	97,858 cubic meters of transuranic waste	≤ 102,591 cubic meters of transuranic waste	99,179 cubic meter

Result	Met - 76,494 Exceeded - 81,138 Not Met - 96,016 Not Met - 99,179 Not Met - 102,026
Endpoint Target	This metric has a life cycle estimate of 148,526 cubic meters
Commentary on 2015 Results (Action Plan if Not Met)	At the end of the fourth quarter of FY 2015, the EM program dispositioned a cumulative total of 102,026 cubic meters of combined Remote Handled and Contact Handled Transuranic Waste which included TRU waste that was characterized and disposed as Low Level Waste or Mixed Low Level Waste. Action Plan: Since the February 2014 incidents, the Waste Isolation Pilot Plant is currently engaged in recovery efforts with a goal to emplace waste in WIPP in by the end of 2016.
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management Oversight and Assessments. The EM Program also maintains a means of documenting this specific performance metric: Shipping Manifests.

Site Restoration

Program	Site Restoration				
Performance Goal (Measure)	Industrial facilities completed - Industrial facilities completed				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	1,900 facilities completed	1,961 facilities completed	2,070	2,107 Number of Facilities
Result		Not Met - 1,895	Met - 2,128	Met - 2,095	Met - 2,105
Endpoint Target	This metric has a life cycle estimate of 4,107 facilities				
Commentary on 2015 Results (Action Plan if Not Met)	At the end of the fourth quarter of FY 2015 the EM program completed a cumulative total of 2,105 Industrial facilities, two short of its target. Two facilities targeted for completion at the Oak Ridge site were demolished, however the required documentation was not provided to the regulators before the end of FY 2015.				
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management Oversight and Assessments. EM also maintains a variety of sources for validation and verification of specific results for this metric, Decommissioning Project Final Report as well as State and federal regulator acceptance of completion report.				

Program	Site Restoration				
Performance Goal (Measure)	Nuclear Facility Completions (number of facilities) - Complete remediation work at a cumulative total of nuclear facilities.				
Fiscal Year	2011	2012	2013	2014	2015
Target	94	130 facilities	131 facilities	138 facilities	153 Number of facilities
Result	Met - 94	Not Met - 128	Met - 131	Not Met - 146	Not Met - 151
Endpoint Target	This metric has a life cycle estimate of 487 facilities.				
Commentary on 2015 Results (Action Plan if Not Met)	At the end of the fourth quarter of FY 2015 the EM program completed a cumulative total of 151 Nuclear Facilities. Action Plan: The EM Program will reassess its nuclear facility completion activities for FY 2016 and adjust its target accordingly in the FY 2017 Congressional Budget Request.				
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Acquisition and Project Management. EM also maintains a variety of sources for validation and verification of specific results for this metric,: Decommissioning Project Final Report as well as State and federal regulator acceptance of completion report.				

Program	Site Restoration				
Performance Goal (Measure)	Radioactive Facilities - Complete remediation work at a cumulative total of radioactive facilities.				
Fiscal Year	2011	2012	2013	2014	2015
Target	393 radioactive facilities	525 radioactive facilities	534 radioactive facilities	561 radioactive facilities	563 number of facilities
Result	Not Met - 386	Met - 408	Met - 555	Met - 561	Met - 566
Endpoint Target	This metric has a life cycle estimate of 960 radioactive facilities				
Commentary on 2015 Results (Action Plan if Not Met)	The EM Program exceeded its target for FY 2015 by three facilities.				
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S.				

Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Acquisition and Project Management. EM also maintains a variety of sources for validation and verification of specific results for this metric: Decommissioning Project Final Report as well as State and federal regulator acceptance of completion report.

Program	Site Restoration				
Performance Goal (Measure)	Release Site Remediation Completions - Complete remediation work at a cumulative total release sites.				
Fiscal Year	2011	2012	2013	2014	2015
Target	7,157 release sites	7,361 release sites	7,627 release sites	8,035 release sites	8,201 release sites
Result	Not Met - 7,118	Not Met - 7,496	Not Met - 7,849	Not Met - 7,945	Not Met - 8,021
Endpoint Target	This metric has a life cycle estimate of 10,992 release sites.				
Commentary on 2015 Results (Action Plan if Not Met)	At the end of the fourth Quarter of FY 2015 the EM program completed a cumulative total of 8,027 release sites in the EM Program. Action Plan: The EM Program is reevaluating the targets that were missed in FY 2015. These remaining targets will be distributed to FY 2016 and the remaining out years.				
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM's programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department's Inspector General, the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Acquisition and Project Management. State and federal regulator acceptance of the Remedial Action Report.				

Legacy Management

Legacy Management

The mission of the LM program is to fulfill the Department's post-closure responsibilities and ensure the future protection of human health and the environment. As part of the mission, LM performs long-term surveillance and maintenance. That activity is the target of LM's performance measures

Program	Legacy Management				
Performance Goal (Measure)	Environmental Remedies - Conduct surveillance and maintenance activities to ensure the effectiveness of cleanup remedies in accordance with legal agreements or identify sites subject to additional remedial action in order to ensure effectiveness at all sites within Legacy Management's responsibility.				
Fiscal Year	2011	2012	2013	2014	2015
Target	87 sites inspected	87 activities	89 activities	89 sites	89 sites

Result	Met - 87	Met - 87	Met - 89	Met - 89	Met - 89
Endpoint Target	Continued inspections on all sites until risk has been reduced to the point that further inspections are not needed.				
Commentary on 2015 Results (Action Plan if Not Met)	Continue striving for continued progress.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Legacy Management				
Performance Goal (Measure)	Surveillance and Maintenance Cost - Reduce the cost of performing long-term surveillance and monitoring activities while meeting all regulatory requirements to protect human health and the environment. Reduction is measured in percent from the life-cycle baseline. Goal is a 2 percent reduction below the baseline each year.				
Fiscal Year	2011	2012	2013	2014	2015
Target	2 percent reduction below the baseline	4 percent reduction below the baseline	2 percent reduction	2 % cost savings	≥ 2 %
Result	Met - 14.3	Met - 11.4	Met - 11.8	Exceeded - 7.9	Met - 2
Endpoint Target	Achieve a 2 percent reduction below the baseline each year.				
Commentary on 2015 Results (Action Plan if Not Met)	2% achieved				
Documentation, Limitations, Methodology, Validation, and Verification					

Office of Science

Advanced Scientific Computing Research

Support research to discover, develop, and deploy the computational and networking capabilities to analyze, model, simulate, and predict complex phenomena important to DOE

Program	Advanced Scientific Computing Research				
Performance Goal (Measure)	ASCR Facility Operations - Average achieved operation time of ASCR user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	2011	2012	2013	2014	2015

Target	N/A	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result		Met	Met	Met	Met
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Operation of the three scientific computing user facilities (NERSC, OLCF, and ALCF) was 99.3% of scheduled annual operating time.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly and EOY: This data comes directly from the batch queue accounting system at NERSC, OLCF and ALCF. The Number of CPU hours accounted for by system failures and other unscheduled downtime. Reports detailing this progress reside in the files of the ASCR Office (SC-21).				

Program	Advanced Scientific Computing Research				
Performance Goal (Measure)	ASCR Research - Discovery of new applied mathematics and computer science tools and methods that enable DOE applications to deliver scientific and engineering insights with a significantly higher degree of fidelity and predictive power				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	1	Accept and put into service 10 petaflop upgrades at Argonne and Oak Ridge Leadership Computing Facilities	Support at least two new teams to conduct fundamental computer science research and at least three applied mathematics research teams that address issues of fault tolerance or energy management for next-generation computing systems.	Conduct an external peer review of the three original co-design centers to document progress, impact, and lessons learned.
Result		Not Met	Met	Met	Met
Endpoint Target	Develop and deploy high-performance computing hardware and software systems through exascale platforms				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Peer review of CO-design centers completed. Review documentation included impact and lessons learned to inform future recompute decision.				

Documentation, Limitations, Methodology, Validation, and Verification	Quarterly and EOY: Research effort tracked through annual progress reports and quarterly program manager review of project accomplishments. Documents will be stored in ASCR files. New awards will be documented through PAMS.
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Basic Energy Sciences

Support fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels in order to provide the foundations for new energy technologies and to support the DOE mission in energy, environment, and national security

Program	Basic Energy Sciences				
Performance Goal (Measure)	BES Construction/MIE Cost & Schedule - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	2011	2012	2013	2014	2015
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	Met	Met	Met	Met	Met
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Cost-weighted mean percent variance from cost baseline was 8% and from the schedule baseline was 4%.				
Documentation, Limitations, Methodology, Validation, and Verification	<p>BES Projects include those that have an approved performance baseline at the start of FY 2015, which include: NSLS-II and NEXT.</p> <p>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).</p>				

Program	Basic Energy Sciences				
Performance Goal (Measure)	BES Energy Storage - Deliver two high-performance research energy storage prototypes for transportation and the grid that project at the battery pack level to be five times the energy density at 1/5 the cost of the 2011 commercial baseline.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	Through the "electrolyte genome,"

					demonstrate a framework for designing new electrolytes using structure-chemical trends extracted from >10,000 first-principles calculated molecular motifs, modifications and mutations.
Result					Met
Endpoint Target	Three specific outcomes: 1) A library of the fundamental science of the materials and phenomena of energy storage at atomic and molecular levels; 2) two prototypes, one for transportation and one for the electricity grid, that, when scaled up to manufacturing, have the potential to meet JCESR's 5-5-5 goals; 3) A new paradigm for battery R&D that integrates discovery science, battery design, research prototyping and manufacturing collaboration in a single highly interactive organization.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Annual target met. The Electrolyte Genome database contains 16,591 molecule calculations at neutral, negatively, and positively charged states with various associated properties, such as structure, vibrational analysis, ionization, and electron affinity potentials.</p> <p>References: The methodology and evaluation for the Electrolyte Genome calculations was discussed in the scientific article, "The Electrolyte Genome project: A big data approach in battery materials discovery" (DOI: 10.1016/j.commat.2015.02.050) published in Computational Materials Sciences in June 2015. Additional information on their successful completion of the FY 2015 goal is in the 2015 Review document and the Q10 (April-June 2015) quarterly report.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	The DOE Energy Innovation Hub for Batteries and Energy Storage is responsible for achieving this performance goal. The Hub's performance during the initial five-year award period will be assessed using these metrics: completion of proposed milestones, assessment by annual peer review, scientific productivity, technology transfer to the private sector, integration of R&D across the energy storage community, and training of the next-generation of energy storage scientists and engineers. Performance against milestones will be evaluated by annual peer reviews and monitored by quarterly progress reports. Documentation on the annual peer reviews and quarterly progress reports reside in files in the BES program office (SC-22).				
Program	Basic Energy Sciences				
Performance Goal (Measure)	BES Facility Operations - Average achieved operation time of BES user facilities as a percentage of total scheduled annual operation time				

Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	Met	Met	Met	Met	Met
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Actual operating time at BES facilities was 30,258 hours, which is 100.5% of the planned 30,100 hours.				
Documentation, Limitations, Methodology, Validation, and Verification	<p>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).</p> <p>The total planned operating hours for this goal is obtained from the planned operating hours of these individual user facilities in FY15: NSLS-II 2,100; SSRL 5,200; ALS 5,000; APS 5,000; LCLS 4,700; HFIR 3,400; and SNS 4,700 for a total of 30,100 hours (27,090 hours is 90%).</p>				

Biological and Environmental Research

Support fundamental research to address diverse and critical global challenges, from the sustainable and affordable production of renewable biofuels to understanding and predicting climate change and greenhouse gas emissions relevant to energy production and technology use

Program	Biological and Environmental Research				
Performance Goal (Measure)	BER Climate Model - 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				
Fiscal Year	2011	2012	2013	2014	2015
Target	Earth system model to be used in generating scenarios for IPCC Fifth Assessment Report and provide integrated aerosol sub-model that includes direct and indirect forcing	Demonstrate coupled climate models at 20-kilometer resolution	Use new climate model simulations to quantify interactions between clouds and climate changes.	Use global models to estimate most sensitive elements of terrestrial carbon to climate change for tropics, mid-latitudes, and polar regions	Develop capabilities to extend temporal resolution to sub-decadal for earth system models.

Result	Met	Met	Met	Met	Met
Endpoint Target	BER supports the Community Earth System Model, a leading U.S. climate model, and addresses two of the most critical areas of uncertainty in contemporary climate science—the impact of clouds and aerosols. Delivery of improved scientific data and models (with quantified uncertainties) about the potential response of the Earth atmosphere system to more accurately predict the Earth's future climate is essential to plan for future energy needs, water resources, and land use. DOE will continue to advance the science necessary to further develop predictive climate and earth system models at the regional spatial scale and decadal to centennial time scales, involving close coordination with the U.S. Global Change Research Program and through the international science community.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Each quarter marked progress towards major model developments that have led to improved decadal predictability. All quarterly reports posted at http://www.climatemodeling.science.energy.gov/fy-2015-performance-metrics				
Documentation, Limitations, Methodology, Validation, and Verification	Emails reporting the results and publication/availability of the results (per documented control process). Report is available at http://climatemodeling.science.energy.gov/about/metrics/				

Program	Biological and Environmental Research				
Performance Goal (Measure)	BER Predictive Understanding - Advance an iterative systems biology approach to the understanding and manipulation of plant and microbial genomes as a basis for biofuels development and predictive knowledge of carbon and nutrient cycling in the environment.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	Develop one new computationally enabled approach to analyze complex genomic datasets.
Result					Met
Endpoint Target	Deciphering the genomic blueprint of organisms and determining how this information is translated to integrated biological systems permits predictive modeling of bioprocesses and enables targeted redesign of plants and microbes. BER research will address fundamental knowledge gaps and provide foundational systems biology information necessary to advance development of sustainable bioenergy systems and predict impacts of changing environmental conditions on carbon cycling and other biogeochemical processes.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target Met. End of year report on developing one new computationally enabled approach to analyze complex genomic datasets is posted at http://jgi.doe.gov/our-projects/statistics/				

Documentation, Limitations, Methodology, Validation, and Verification	Quarterly - Emails from the designated performers reporting the research results (per documented control process).				
	EOY - Emails reporting the results and publication/availability of the results (per documented control process).				
	Report is available at http://jgi.doe.gov/our-projects/statistics/				

Fusion Energy Sciences

Support research to expand the fundamental understanding of matter at very high temperatures and densities and to build the scientific foundation of fusion energy

Program	Fusion Energy Sciences				
Performance Goal (Measure)	FES Construction/MIE Cost & Schedule - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	2011	2012	2013	2014	2015
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	Met	Met	Met	Met	Met
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Cost variance was -5% and schedule variance was 0%.				
Documentation, Limitations, Methodology, Validation, and Verification	Information is available in the PARS II System for NSTX Upgrade.				

Program	Fusion Energy Sciences				
Performance Goal (Measure)	FES Facility Based Experiments - Experiments conducted on major fusion facilities (DIII-D, Alcator C-Mod, NSTX) leading toward predictive capability for burning plasmas and configuration optimization				
Fiscal Year	2011	2012	2013	2014	2015
Target	Improve the understanding of the physics mechanisms responsible for the structure of the	Conduct experiments and analysis on major fusion facilities leading toward	Conduct experiments and analysis to explore enhanced confinement regimes	Conduct experiments and analysis to investigate and quantify plasma	Conduct experiments and analysis to quantify the impact of broadened current

	<p>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.</p>	<p>improved understanding of core transport and enhanced capability to predict core temperature and density profiles. Assess the level of agreement between predictions from theoretical and computational transport models and the available experimental measurements of core profiles, fluxes and fluctuations. The research is expected to exploit the diagnostic capabilities of the facilities (Alcator C-Mod, DIII-D, NSTX) along with their abilities to run in both unique and overlapping regimes. The work will emphasize simultaneous comparison of model predictions with experimental energy, particle and impurity transport levels and fluctuations in various regimes, including those regimes with</p>	<p>without large edge instabilities, but with acceptable edge particle transport and a strong thermal transport barrier. Coordinated experiments, measurements, and analysis will be carried out to assess and understand the operational space for these conditions. By exploiting the complementary parameters and tools of the devices, joint teams will work to strengthen the basis for extrapolation of these regimes to ITER and other future fusion devices.</p>	<p>response to non-axisymmetric (3D) magnetic fields in tokamaks. Effects of 3D fields can be both beneficial and detrimental, and research will aim to validate theoretical models in order to predict plasma performance with varying levels and types of externally imposed 3D fields. Dependence of response to multiple plasma parameters will be explored in order to gain confidence in predictive capability of the models.</p>	<p>and pressure profiles on tokamak plasma confinement and stability. Broadened pressure profiles generally improve global stability but can also affect transport and confinement, while broadened current profiles can have both beneficial and adverse impacts on confinement and stability. This research will examine a variety of heating and current drive techniques in order to validate theoretical models of both the actuator performance and the transport and global stability response to varied heating and current drive deposition.</p>
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		significant excitation of electron modes. Along with new experiments, work will include analysis of relevant previously-collected data and collaboration among the research teams. The results achieved will be used to improve confidence in transport models used for extrapolations to planned ITER operation.			
Result	Met	Met	Met	Met	Met
Endpoint Target	Magnetic fields are the principal means of confining the hot ionized gas of a plasma long enough to make practical fusion energy. The detailed shape of these magnetic containers leads to many variations in how the plasma pressure is sustained within the magnetic bottle and the degree of control that experimenters can exercise over the plasma stability. These factors, in turn, influence the functional and economic credibility of the eventual realization of a fusion power reactor. The key to their success is a detailed physics understanding of the confinement characteristics of the plasmas in these magnetic configurations. The major fusion facilities can produce plasmas that provide a wide range of magnetic fields, plasma currents, and plasma shapes. By using a variety of plasma control tools, appropriate materials, and having the diagnostics needed to measure critical physics parameters, scientists will be able to develop optimum scenarios for achieving high performance plasmas in the International Thermonuclear Experimental Reactor and, ultimately, in reactors.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Research teams from the three major magnetic fusion facilities collaborated to conduct experiments and/or use previous data from the facilities to study the impact of broadened current and pressure profiles on tokamak plasma confinement and stability. The final report describes the progress in this area and identifies paths for future research.				
Documentation, Limitations, Methodology, Validation, and Verification	V&V data are contained in progress reports maintained by the FES program office.				

Program	Fusion Energy Sciences				
Performance Goal (Measure)	FES Facility Operations - Average achieved operation time of FES user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	Not Met	Met	Met	Met	Not Met
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2015 Results (Action Plan if Not Met)	<p>Annual target not met. Total hours achieved were 949 which is 65% of the planned 1,464 hours. Target missed due to an incident which delayed the restart of NSTX-U. Both Alcator C-Mod and DIII-D meet their operating target of achieving at least 90% of scheduled operating time.</p> <p>Action Plan: PPPL completed internal and external reviews and a root cause analysis to determine the cause of the incident. Problems identified in the reviews and analysis will be addressed to minimize the chance of this happening again. Additionally, the Fusion Facilities Operating Committee shall meet more often.</p>				
Documentation, Limitations, Methodology, Validation, and Verification	<p>V&V data are contained in progress reports maintained by the FES program office.</p> <p>FES's major national fusion facilities are:</p> <ul style="list-style-type: none"> - the DIII-D Tokamak at General Atomics in San Diego, California. (600 hours of operations are planned for DIII-D); - the Alcator C-Mod Tokamak at the Massachusetts Institute of Technology (384 hours of operations are planned for Alcator C-Mod); - the National Spherical Torus Experiment-Upgrade at the Princeton Plasma Physics Laboratory. (The major NSTX upgrade project will be completed this year and operations will resume, with 480 hours planned.) <p>1,464 hours total (baseline) are expected for FY15.</p>				

Program	Fusion Energy Sciences				
Performance Goal (Measure)	FES Theory and Simulation - Performance of simulations with high physics fidelity codes to address and resolve critical challenges in the plasma science of magnetic confinement				
Fiscal Year	2011	2012	2013	2014	2015

Target	<p>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</p>	<p>Improve our understanding of the effects of relatively small nonaxisymmetric fields in tokamak equilibria, with a focus on effects that are of potential importance for ITER. Focus particularly on understanding experiments on the DIII-D tokamak in which relatively small nonaxisymmetric fields are used to suppress edge localized modes (ELMs). ELMs pose a threat to the goals of the ITER experiment, and a similar method for suppressing ELMs is under consideration for ITER. An improved first-principles understanding of the DIII-D experiments will improve our ability to make reliable predictions of ITER performance.</p>	<p>Carry out advanced simulations to address two of the most problematic consequences of major disruptions in tokamaks: the generation and subsequent loss of high-energy electrons (runaway electrons), which can damage the first wall, and the generation of large electromagnetic loads induced by disruptions. Assess the severity of these effects on ITER.</p>	<p>Understanding alpha particle confinement in ITER, the world's first burning plasma experiment, is a key priority for the fusion program. Linear instability trends and thresholds of energetic particle-driven shear Alfvén eigenmodes in ITER are determined for a range of parameters and profiles using a set of complementary simulation models (gyrokinetic, hybrid, and gyrofluid). Initial nonlinear simulations are carried out to assess the effects of the unstable modes on energetic particle transport.</p>	<p>Perform massively parallel plasma turbulence simulations to determine expected transport in ITER. Starting from best current estimates of ITER profiles, the turbulent transport of heat and particles driven by various microinstabilities (including electromagnetic dynamics) will be computed. Stabilization of turbulence by nonlinear self-generated flows is expected to improve ITER performance, and will be assessed with comprehensive electromagnetic gyrokinetic simulations.</p>
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	mechanisms, and to make progress in developing a validated physics model for the pedestal height.				
Result	Met	Met	Met	Met	Met
Endpoint Target	Advanced simulations based on high physics fidelity models offer the promise of advancing scientific discovery in the plasma science of magnetic fusion by exploiting the Science high performance computing resources and associated advances in computational science. These simulations are able to address the multiphysics and multiscale challenges of the burning plasma state and contribute to the FES goal of advancing the fundamental science of magnetically confined plasmas to develop the predictive capability needed for a sustainable fusion energy source.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. The results highlighted the importance of including both the high and low wavenumber (k) turbulence in simulations focused on determining the performance of ITER. The high-k part of the turbulence spectrum, often omitted in previous work, contributes to the energy transport in ITER. This part of the spectrum is much more computationally expensive to model, requiring multiscale simulations. An additional benefit of this effort was the recalibration of the widely used TGLF reduced transport model to include the new effects.				
Documentation, Limitations, Methodology, Validation, and Verification	V&V data are contained in progress reports maintained by the FES program office.				

High Energy Physics

Support research toward understanding how the universe works at its most fundamental level by discovering the most elementary constituents of matter and energy, probing the interactions among them, and exploring the basic nature of space and time itself

Program	High Energy Physics				
Performance Goal (Measure)	HEP Construction/MIE Cost & Schedule - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	2011	2012	2013	2014	2015
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	Met	Met	Met	Met	Met
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				

Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. For the five tracked projects, the cost-weighted cost variance was less than 1% and the cost-weighted schedule variance was less than 4%.
Documentation, Limitations, Methodology, Validation, and Verification	<p>Derived from Quarterly Project Reports for the following projects:</p> <ol style="list-style-type: none"> 1. LHC ATLAS Detector Upgrade 2. LHC CMS Detector Upgrade 3. LSSTcam Project 4. Muon to Electron Conversion Experiment 5. Muon g-2 Experiment <p>Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project.</p> <p>The supporting documentation resides in the files of the HEP Office (SC-25), and a web site is under development.</p>

Program	High Energy Physics				
Performance Goal (Measure)	HEP Facility Operations - Average achieved operation time of HEP user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %
Result	Met	Met	Not Met	Met	Met
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Total actual hours were 8,018 which is 86% of the scheduled 9,376 hours of operations.				
Documentation, Limitations, Methodology, Validation, and Verification	<p>Derived from letters from Lab Directors or designee. Fermi data are reported at http://www-bdnew.fnal.gov/operations/lum/supertable.html.</p> <p>The scientific user facilities and scheduled hours:</p> <ul style="list-style-type: none"> - Total hours scheduled is 9376 hours (7501 hours is 80%). - FACET is scheduled to for 5176 hours during Q1, Q2 and Q3 (4141 hours is 80%). - Fermilab Accelerator Complex is scheduled to run 4200 hours in FY 2015 (3360 is 80%). <p>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 budget submission.</p>				

Program	High Energy Physics				
Performance Goal (Measure)	HEP Neutrino Model – Carry out series of experiments to test the standard 3-neutrino model of mixing				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	Measure the mixing angle between muon neutrinos and electron neutrinos ($\sin^2(2\theta_{13})$) by measuring the disappearance of electron antineutrinos with the Daya Bay Reactor Experiment. This measurement should have an uncertainty of 0.0075 or smaller.	Begin operation of full NovA detector using neutrino beam from Fermilab for purpose of measuring mixing angle between muon neutrinos and electron neutrinos ($\sin^2(2\theta_{13})$) using the appearance electron neutrinos.	Physics analyses results from the first year of data taking with the full detector will be presented by the NovA and MicroBooNE experimental collaborations at the FY 2015 summer conferences.
Result			Met	Met	Not Met
Endpoint Target	Like the quarks, it is believed that mixing between neutrinos can be described by a unitary matrix. Measuring the independent parameters of this matrix in different ways and with adequate precision will demonstrate whether this model of neutrinos is correct. Such a model is needed to correctly extract evidence for CP violation in the neutrino sector.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target not met. NOvA took data and presented results at the summer conferences. However, the Booster neutrino beam became operational only several weeks before the summer shutdown, and MicroBooNE was not able complete filling its detector with liquid argon before the shutdown. Therefore no neutrino data was taken by MicroBooNE before the summer conferences. Summer conference results for MicroBooNE was limited to commissioning results. Action Plan: (for MicroBooNE): collect data when available.				
Documentation, Limitations, Methodology, Validation, and Verification	QTR: progress reports EOY: a letter or report from the Laboratory Director at Fermi National Accelerator Laboratory confirming that the full NOvA detector and the NuMI neutrino beam are operational. The supporting documentation resides in the files of the HEP Office (SC-25), and a web site is under development.				

Nuclear Physics

Support research to discover, explore, and understand all forms of nuclear matter, supporting experimental and theoretical research to create, detect, and describe the different forms and complexities of nuclear matter that can exist in the universe, including those that are no longer found naturally

Program	Nuclear Physics				
Performance Goal (Measure)	NP Construction/MIE Cost & Schedule - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	2011	2012	2013	2014	2015
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	Met	Met	Met	Met	Met
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. The 12 GeV project is within 10% of the cost and schedule variance: schedule variance 1% (SPI = 0.99); cost variance 3% (CPI=0.97).				
Documentation, Limitations, Methodology, Validation, and Verification	<p>Derived from the Monthly Report preceding the end of the quarter for the following projects: - 12 GeV CEBAF Upgrade</p> <p>Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project.</p> <p>The supporting documentation resides in the files of the ONP (SC-26).</p>				

Program	Nuclear Physics				
Performance Goal (Measure)	NP Facility Operations - Average achieved operation time of NP user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %
Result	Met	Met	Met	Met	Met
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				

Commentary on 2015 Results (Action Plan if Not Met)	<p>Annual target met. NP user facilities operated 10,091 hours, 116% of the planned operating hours of 8,670 hours. Operating hours were exceeded at both RHIC and ATLAS due to record reliability, and postponement of planned maintenance and installation of equipment, respectively.</p> <p>References: Email and official letter submitted to NP (SC-26) from ANL/ATLAS (Robert Janssens) and BNL/RHIC (Berndt Mueller). Supporting worksheets from the laboratory and a composite worksheet generated by NP.</p>
Documentation, Limitations, Methodology, Validation, and Verification	<p>The total planned operating hours for ATLAS and RHIC is 8,670 hours (80% is 6,936 hours).</p> <p>Quarterly: Emails from ANL (ATLAS) and BNL (RHIC) management to NP Office with statistics regarding breakout of beam hours (per documented control process); NP program office worksheet showing calculations.</p> <p>EOY: Official letters from ANL (ATLAS) and BNL (RHIC) management to NP Office reporting and certifying annual achieved operation time of the user facility (per documented control process); NP program office worksheet.</p> <p>Documentation resides in the Office of Nuclear Physics (SC-26) files. This target is met when the total operating time is 80% or greater.</p>

Program	Nuclear Physics				
Performance Goal (Measure)	NP Nuclear Structure - Conduct fundamental research to discover, explore, and understand all forms of nuclear matter.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	Complete initial measurements with high resolving power tracking array, GRETINA, for sensitive studies of structural evolution and collective modes in nuclei.	Perform mass measurements and nuclear reaction studies to infer weak interaction rates in nuclei in order to constrain models of supernovae and stellar evolution.	Conduct fundamental research to discover, explore, and understand all forms of nuclear matter. FY15: Measure bulk properties, particle spectra, correlations and fluctuations in gold + gold collisions at Relativistic Heavy

					Ion Collider (RHIC) to search for evidence of a critical point in the Quantum Chromodynamics (QCD) matter phase diagram.
Result			Met	Met	Met
Endpoint Target	Increase the understanding of the existence and properties of nuclear matter under extreme conditions, including that which existed at the beginning of the universe				
Commentary on 2015 Results (Action Plan if Not Met)	Annual target met. Progress was made in advancing the search for evidence of the critical point from acquired RHIC data; preliminary results were shown at the recent Quark Matter conference. References: Email and letter from Berndt Mueller to SC-26 including quarterly report.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly: Emails from BNL RHIC Management to NP Office with progress towards achieving goals. EOY: Official letter from BNL RHIC Management to NP Office reporting and certifying progress made towards achieving goal. Documentation resides in the Office of Nuclear Physics (SC-26) files. The DOE PMM FY15 target is met when data is acquired in search of evidence of a critical point in the Quantum Chromodynamics (QCD) matter phase diagram is provided by BNL RHIC.				

ARPA-E

Continue to create new companies as a direct result of ARPA-E funding. From its FY 2013 baseline, it is assumed that ARPA-E's funding can contribute to the creation of 3 new companies per year.

Program	Advanced Research Projects Agency - Energy				
Performance Goal (Measure)	New Company Formation - Number of new companies formed as a direct result of ARPA-E funding. This is a new performance measure for ARPA-E in FY 2015. As of the end of FY 2013 ARPA-E funded research has led to the formation of at least 24 new companies. That is the baseline from which we would expect to add at least 3 new companies per year.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	≥ 3 new companies founded

Result					Data Not Available
Endpoint Target	No endpoint – continuous measure of impact of ARPA-E awards on creating new jobs and industries				
Commentary on 2015 Results (Action Plan if Not Met)	As reported in the FY 2016 Congressional Budget Request, ARPA-E funded research has led to the formation of at least 24 new companies. ARPA-E expects this trend to continue at the rate of 3 company formations per year. Throughout the duration of FY 2015, ARPA-E will continue to monitor this metric and report the total in the end of FY 2015 annual report. FY 2015 EOY quantitative metrics should be available in February 2016.				
Documentation, Limitations, Methodology, Validation, and Verification	ARPA-E Press Release: http://arpa-e.energy.gov/sites/default/files/documents/files/2015%20ARPA-E%20Summit%20Press%20Release%20Addendum_FINAL.pdf				

Advanced Research Projects Agency - Energy

Fund specific high-risk, high-payoff, game-changing research and development projects to meet the nation's long-term energy challenges

Program	Advanced Research Projects Agency - Energy				
Performance Goal (Measure)	Award Funding - Cumulative percentage of award funding committed 45 days after award selections are announced				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %
Result		Met - 70	Met - 70	Met - 70	Met - 100
Endpoint Target	No endpoint - continuous measure of efficiency in awarding funds				
Commentary on 2015 Results (Action Plan if Not Met)	In FY15, per target, more than 70% of awardee funding was committed within 45 days of selection. After announcement, selected funds are reserved and tracked in ARPA-E planning worksheets. These worksheets are reviewed by ARPA-E leadership on a monthly basis. FOAs announced in FY15 (e.g., MOSAIC, TRANSNET, GENSETS, TERRA, ALPHA, ARID, DELTA, and MONITOR) had more than 70% of awardee funding committed within 45 days of selection. As such, "Met" has been reported in PMM and the FY 2017 OMB Budget Justification.				
Documentation, Limitations, Methodology, Validation, and Verification	ARPA-E Internal Records				

Chief Information Officer

Strengthen enterprise situational awareness to foster near-real-time risk management and combat the advanced persistent threat; forge interagency and sector partnerships to protect critical infrastructure, promote information sharing, and advance technologies for cyber defenses.

Program					
Performance Goal (Measure)	Continuous Monitoring - Provide ongoing observation, assessment, analysis, and diagnosis of an organization's cybersecurity.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	All management capabilities combined 63%.
Result					Exceeded – 64%
Endpoint Target	Improve awareness of security practices, vulnerabilities, and threats to the operating environment by limiting access to only authorized users and implementing technologies and processes that reduce the risk from malicious activity.				
Commentary on 2015 Results (Action Plan if Not Met)	The Continuous Monitoring performance measure for all management capabilities combined exceeded the target goal of 63%.				
Documentation, Limitations, Methodology, Validation, and Verification					

Strengthen enterprise situational awareness to foster near-real-time risk management and combat the advanced persistent threat; forge interagency and sector partnerships to protect critical infrastructure, promote information sharing, and advance technologies for cyber defenses.

Program					
Performance Goal (Measure)	Strong Authentication PIV Access - Establish a Strong Authentication performance measure with the following capabilities/targets by Q4 FY15: Unprivileged Network Users (39%) and Privileged Network Users (10%).				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	26%
Result					Not Met – 23%

Endpoint Target	Improve awareness of security practices, vulnerabilities, and threats to the operating environment by limiting access to only authorized users and implementing technologies and processes that reduce the risk from malicious activity.
Commentary on 2015 Results (Action Plan if Not Met)	The Strong Authentication (PIV/ICAM) performance measure which includes Privileged and Unprivileged Network User capabilities did not meet their target goals throughout the year except for Q3 FY15. Per OMB, the target goals were not established until Q3 FY15. Action Plan: Target goals should be established and communicated before tracking a performance measure.
Documentation, Limitations, Methodology, Validation, and Verification	

Strengthen enterprise situational awareness to foster near-real-time risk management and combat the advanced persistent threat; forge interagency and sector partnerships to protect critical infrastructure, promote information sharing, and advance technologies for cyber defenses.

Program					
Performance Goal (Measure)	Anti-Phishing and Malware Defense (APMD) - Establish an Anti-Phishing and Malware Defense (APMD) performance measure with the following capabilities/targets by Q4 FY15: Anti-Phishing Defense (48%), Malware Defense (49%), and Blended Defense (70%).				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	N/A	59%
Result					Not Met – 51%
Endpoint Target	Improve awareness of security practices, vulnerabilities, and threats to the operating environment by limiting access to only authorized users and implementing technologies and processes that reduce the risk from malicious activity.				
Commentary on 2015 Results (Action Plan if Not Met)	The Anti-Phishing and Malware Defense (APMD) performance measure which includes Anti-Phishing, Malware, and Blended Defense capabilities did not meet their target goals throughout the year except for the Malware Defense capability in Q4 FY15. Per OMB, the target goals were not established until Q3 FY15. Action Plan: Target goals should be established and communicated before tracking a performance measure.				
Documentation, Limitations, Methodology, Validation, and Verification					

Departmental Administration

Strengthen enterprise situational awareness to foster near-real-time risk management and combat the advanced persistent threat; forge interagency and sector partnerships to protect critical infrastructure, promote information sharing, and advance technologies for cyber defenses.

Program	Departmental Administration				
Performance Goal (Measure)	IT Sustainability and Data Center Optimization - 49. Generate savings through implementation of a 10% enterprise IT consolidation (e.g., servers) and sustainability plan and optimization of Federally-managed data centers.				
Fiscal Year	2011	2012	2013	2014	2015
Target	1 data centers	5 \$M Cost Savings	2 data centers closed	Pending executive approval of the Energy Savings Performance Contract (ESPC) project, the OCIO will consolidate two data centers in FY14 & FY15 and begin accruing annual savings of \$12 million in FY16. There will be no cost savings/avoidance achieved in FY 2014.	\$ 12 \$M cost savings
Result	Met - 1	Met - 5	Met - 2	N/A - 0	Not Met - 1.52
Endpoint Target	By FY 2015, generate cost savings through implementation of a 10% enterprise IT consolidation (e.g., data centers) per the DOE Federal Data Center Consolidation Initiative (FDDCI) plan.				
Commentary on 2015 Results (Action Plan if Not Met)	Initial savings of \$12M was expected from the consolidation of two data centers in FY15 and FY16. By the end of FY15, only \$1.52M savings was realized from the completed initiatives. Further savings expected in Q1 FY16 with the consolidation of the Sun Solaris / Oracle Application Servers. Action Plan: Review expected/realistic cost savings for FY2016.				
Documentation, Limitations, Methodology, Validation, and Verification	CIO Status of IT Commodity Initiatives as of Aug 2015.				

Program	Departmental Administration				
Performance Goal (Measure)	IT Transformation - Implement the plan to transform the delivery of commodity IT services (people & processes) to achieve cost savings.				
Fiscal Year	2011	2012	2013	2014	2015
Target	Set baseline for assessing delivery of IT services	3.2 \$M Cost Savings	8.96 \$M Cost Savings	\$ 9.76 \$Millions	\$ 4.834 \$M cost savings
Result		Met - 3.2	Exceeded - 9.48	Not Met - 1.8	Not Met - 1.41
Endpoint Target	By FY 2015, achieve \$31.4M in gross cost savings through transforming the delivery of commodity IT services (people and processes) to DOE federal and support service contractors in a secure manner.				
Commentary on 2015 Results (Action Plan if Not Met)	The actual cost savings/avoidance for IT Commodity Savings initiatives ending Q4 FY2015 is \$1.41M, up from new target of \$1.2085M. The additional \$200K cost savings was due to SC's Email and Collaboration Tools consolidation. Action Plan: New target amount was exceeded by \$200K.				
Documentation, Limitations, Methodology, Validation, and Verification	CIO Status of IT Commodity Initiatives dated Aug 2015.				

Office of Management

Program	Departmental Administration				
Performance Goal (Measure)	Expanded use of strategic sourcing - Execute expanded use of Federal Strategic Sourcing Initiative to DOE Federal Procurement Operations while continuing to focus on Contractor Supply Chain Council activities to achieve 3.25% in cost savings against actionable spend by Sep 2013. FY14: Institute a corporate approach (including the laboratories) for strategic sourcing to achieve at least a 4% cost savings target (about \$261M) against spending on products and services.				
Fiscal Year	2011	2012	2013	2014	2015
Target	\$250M	\$250M	195 \$M Cost Savings	> 247 \$M Cost Savings	261 \$M
Result		Met - 264.2	Met - 236	Met - 295.5	Met - 376
Endpoint Target					

Commentary on 2015 Results (Action Plan if Not Met)	Above projection
Documentation, Limitations, Methodology, Validation, and Verification	

Program	Departmental Administration				
Performance Goal (Measure)	Maintain certified acquisition professionals - 34. Maintain levels of certified acquisition professionals				
Fiscal Year	2011	2012	2013	2014	2015
Target	84% (baseline)	0.85	90 %	> 90 %	85 %
Result		Met - 0.93	Met - 95	Met - 93	Met - 85
Endpoint Target					
Commentary on 2015 Results (Action Plan if Not Met)	Met; achieved 85% certified.				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Departmental Administration				
Performance Goal (Measure)	<p>Project Success - On a 3-year rolling basis, the percentage of departmental projects baselined since the start of FY 2008 that were completed within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2.</p> <p>This measure was created on April 23, 2014, specifically for the purpose of tracking progress on the FY14-15 Management Agency Priority Goal. It tracks all projects post-root cause analysis (RCA), while the measure "Capital asset projects" tracks only construction projects.</p>				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	90 %	90 %
Result				Not Met - 76	Not Met - 78
Endpoint Target	On a three-year rolling basis, complete at least 90% of departmental projects baselined since the start of FY 2008 within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2 through FY 2015.				
Commentary on 2015 Results (Action Plan if Not Met)	Action Plan: Address performance at Secretarial-level Project Management Risk Committee.				

Documentation, Limitations, Methodology, Validation, and Verification	The analyst will query the Department's Project Assessment and Reporting System (PARS II) for any capital asset project that achieved Critical Decision 4, Project Completion, over the past three fiscal years to determine project success. Data is not available until 45 days after the end of the quarter.				
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Program	Departmental Administration				
Performance Goal (Measure)	Reduce FOIA backlog - Reduce Freedom of Information Act (FOIA) backlog				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	%10 to 410	< 10 % to 394	10 % to 307
Result		456	Not Met - 438	Met – 22% 341	Met – 17% 281
Endpoint Target					
Commentary on 2015 Results (Action Plan if Not Met)	Reduced the backlog from 307 to 281. Surpassed the yearly goal of 10% by reducing the backlog 17%				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Departmental Administration				
Performance Goal (Measure)	Reduce travel expenses - Reduce non-mission essential travel expenses				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	\$47.5M	30 % reduction	< 30 %	30 %
Result		Not Met - 53	Met - 30	Met - 30	Not Met - 28.6
Endpoint Target					
Commentary on 2015 Results (Action Plan if Not Met)	Action Plan: Limits on Conference travel lifted; mission-essential travel increased				
Documentation, Limitations, Methodology, Validation, and Verification					

Human Capital Management

Program	Departmental Administration
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Performance Goal (Measure)	Annual reductions in the average time-to-hire - 19. Annual reductions in the average time-to-hire (both agency-wide and for each HR office) from 174 days in FY09 to 100 days or less by end of FY 2011, and further to 80 days by end of FY 2012.				
Fiscal Year	2011	2012	2013	2014	2015
Target	100-Day Goal	≤ 80 Calendar Days	≤ 80 Calendar Days	80 Calendar Days	80 calendar days
Result		Not Met - 86	Not Met - 101	Met - 80	Not Met – 98.7
Endpoint Target	Each HR Office will have an average time-to-hire of 80 days or less.				
Commentary on 2015 Results (Action Plan if Not Met)	For Q4, the average hiring time for GS employees was 107.5 days. For FY15, the average hiring time for GS employees was 98.7 days.				
Documentation, Limitations, Methodology, Validation, and Verification	Time to Hire reports, Hiring Management database				

Program	Departmental Administration				
Performance Goal (Measure)	Implement a framework for performance-based culture - Percent of SES with compliant plans.				
Fiscal Year	2011	2012	2013	2014	2015
Target	Pilot e-Performance System via small-scale implementation	100 percent	100 %	The target is to have all SES employees have an established performance plan in place according to the timelines stated in ePerformance	≥ 90 percentage
Result		Not Met	Met	Not Met	Met - 95
Endpoint Target	Improve and continue to refine DOE performance management systems/processes so they clearly link work to mission goals, expected outcomes and accomplishment measures. Ensure meaningful distinctions between levels of performance are identified and rewarded.				
Commentary on 2015 Results (Action Plan if Not Met)	By the end of the 4th quarter, all SES should have their FY15 performance plans closed out. At the time of this reporting, 95% of all established SES performance plans have been closed.				
Documentation, Limitations, Methodology, Validation, and Verification	ePerformance Reports				

Hearings and Appeals

Program	Departmental Administration				
Performance Goal (Measure)	OHA Effectiveness Measure - Improve the timeliness of security cases by reducing the number of cases over 120 days old.				
Fiscal Year	2011	2012	2013	2014	2015
Target	6	4 cases	3 cases	4 cases	4 cases
Result	Exceeded - 0	Met - 4	Met - 3	Met - 3	Met - 3
Endpoint Target	3				
Commentary on 2015 Results (Action Plan if Not Met)	Fewer than 4 cases over 120 days old.				
Documentation, Limitations, Methodology, Validation, and Verification					

Loan Guarantee

The mission of Loan Programs Office (LPO) is to accelerate the domestic commercial deployment of innovative and advanced clean energy technologies at a scale sufficient to contribute meaningfully to the achievement of our national clean energy objectives.

Program					
Performance Goal (Measure)	ATVM Battery Production Capacity - Battery production capacity of 100,000 lithium-ion EV batteries (2,400,000 kWh) established				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries
Result			Met - 100,000	Met - 100,000	Met - 100,000
Endpoint Target	Assist in the development of advanced battery manufacturing capacity to support 100,000 electric vehicles each year, through 2016.				
Commentary on 2015 Results (Action Plan if Not Met)					

Documentation, Limitations, Methodology, Validation, and Verification	The project is changing its way of reporting the target capacity. Currently, each battery has a storage capacity of 24 KWh. If multiplied by 100,000, then the total battery production capacity is 2.4 GWh (in terms of energy, not quantity). However, because the Project is changing the size and storage configuration of some of the batteries, LPO has given them a tolerance of 10%. This means the new battery production capacity will be 2.2 GWh per year.
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Program					
Performance Goal (Measure)	ATVM Reduction in Petroleum Usage - Reduction in petroleum usage (in millions of gallons of fuel per year) achieved through the use of advanced technology vehicles manufactured (at least in part) with funding provided through the ATVM loan program as compared to vehicles available in the base year.				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	≥ 200 Million Gallons	250 Million Gallons	< 290 Millions of gallons of fuel
Result			Met - 210	Met - 306	Met - 335.3
Endpoint Target	Achieve 290 million gallons per year savings through 2016				
Commentary on 2015 Results (Action Plan if Not Met)					
Documentation, Limitations, Methodology, Validation, and Verification	Reduction in petroleum usage (in millions of gallons of fuel per year) achieved through the use of advanced technology vehicles manufactured (at least in part) with funding provided through the ATVM loan program as compared to vehicles available in the base year.				

Program	Loan Program Office				
Performance Goal (Measure)	CO2 Reductions Loans Guarantee - Estimated annual CO2 emissions reductions of projects receiving loan guarantees that have achieved commercial operations compared to 'business as usual' energy generation. (metric tons, mt)				
Fiscal Year	2011	2012	2013	2014	2015
Target	N/A	N/A	N/A	5	≥ 13.1 Metric tons of CO2 emissions reduction
Result				Met - 8.3	Met - 13.1

Endpoint Target	Achieve 16,400,000 mt of avoided CO2 emissions by the end of FY 2016.
Commentary on 2015 Results (Action Plan if Not Met)	
Documentation, Limitations, Methodology, Validation, and Verification	Estimated annual CO2 emissions reductions of projects receiving loan guarantees that have achieved commercial operations compared to 'business as usual' energy generation.

Program	Loan Program Office				
Performance Goal (Measure)	Generation Capacity of Projects Receiving Loan Guarantees - Annual generation capacity from projects receiving DOE loan guarantees that have achieved commercial operations. (Gigawatts, GW)				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 0.1 GW	≥ 1.3 GW	≥ 2.8 GW	≥ 3.8 GW	≥ 3.8 Gigawatts, GW of energy capacity
Result	Met - 0.1	Met - 1.5	Not Met - 1.9	Not Met - 3.2	Met - 3.82
Endpoint Target	Achieve 4.0 GW of annual electricity generation capacity by FY 2015				
Commentary on 2015 Results (Action Plan if Not Met)					
Documentation, Limitations, Methodology, Validation, and Verification	Current methodology involves keeping track of the period when a project comes online and how much capacity it has. The sum of all generation capacity within the FY is recorded and added to the cumulative capacity already online.				

Health, Safety and Security

Departmental Administration

Ensuring the health, safety, and security of DOE workers and vital assets is HSS's contribution to the Department's vital missions in science, energy, and national security.

Program	Departmental Administration				
Performance Goal (Measure)	Former Worker Satisfaction - Obtain an average rating of no less than satisfactory on 90 percent of customer satisfaction surveys from former worker medical screening program participants who receive medical screenings.				
Fiscal Year	2011	2012	2013	2014	2015
Target	90 percent satisfactory rating on	90 percent satisfactory rating on	90 percent satisfactory rating on	90 percent satisfactory rating on	90

	customer satisfaction surveys	customer satisfaction surveys	customer satisfaction surveys	customer satisfaction surveys	
Result	Met - 97	Met - 99	Met - 98	Met - 97	Met - 97
Endpoint Target	N/A; ongoing				
Commentary on 2015 Results (Action Plan if Not Met)	The survey satisfaction results demonstrate AU's and the Department's commitment to its employees and former employees regarding the implementation of the medical screening program.				
Documentation, Limitations, Methodology, Validation, and Verification					

Energy Information Administration

Energy Information Administration

EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment

Program	Energy Information Administration				
Performance Goal (Measure)	Quality of EIA Information Products - Percentage of customers who are satisfied or very satisfied with the quality of EIA information.				
Fiscal Year	2011	2012	2013	2014	2015
Target	90 % customer satisfaction rating	90 % customer satisfaction rating	90 % customer satisfaction rating	90 % customer satisfaction rating	≥ 90 % of customers satisfaction rating
Result	Met - 90	Met - 91	Met - 92	Met - 95	Met - 90
Endpoint Target	This is an ongoing annual performance measure, as information quality is central to EIA's mission.				
Commentary on 2015 Results (Action Plan if Not Met)	EIA actively solicits external feedback by fielding an annual web customer survey 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 and ensures that EIA's customers have access to information that is essential to inform a wide range of energy-related decisions.				
Documentation, Limitations, Methodology, Validation, and Verification	EIA conducted the survey with OMB approval and the results are stored in the files of EIA's Office of Communications.				

Program	Energy Information Administration				
Performance Goal (Measure)	Timeliness of EIA Information Products - Percentage of selected EIA recurring products meet their release date targets (all product types).				
Fiscal Year	2011	2012	2013	2014	2015
Target	95 % of products released on schedule	95 % of products released on schedule	95 % of products released on schedule	95 % of products released on schedule	≥ 95 % of products released on time.
Result	Met - 97	Met - 97	Met - 96	Met - 96	Met - 95
Endpoint Target	This is an ongoing annual performance measure, as timely delivery of energy information is central to EIA's mission.				
Commentary on 2015 Results (Action Plan if Not 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 interactions with the economy and the environment.				
Documentation, Limitations, Methodology, Validation, and Verification	Internal tracking; EIA selected which products to track and is tracking the actual and scheduled release dates. The Quality Assurance Team within EIA's Office of Energy Statistics verifies the calculations and stores the file.				

Southeastern Power Administration

Southeastern Power Administration

Southeastern markets and delivers reliable, cost-based Federal hydroelectric power and provides related services throughout the Southeastern United States.

Program	Southeastern Power Administration				
Performance Goal (Measure)	SEPA Repayment of Federal Power Investment - Repay annually to meet required payments as they come due and assure that all aged investments will be replaced on a timely basis now and in the future.				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	< \$2.141 million dollars AUI
Result	Met - 100	Met - 100	Not Met - did not repay 100%	Met - 100	Met - \$1,686 unpaid investment (UI)

Endpoint Target	Meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.
Commentary on 2015 Results (Action Plan if Not Met)	Met - \$1,686 thousand unpaid investment (UI) Tracking actual dollar amounts to be more descriptive and accurate going forward.
Documentation, Limitations, Methodology, Validation, and Verification	

Program	Southeastern Power Administration				
Performance Goal (Measure)	SEPA System Reliability Performance - NERC - Meet NERC Control Performance Standards (CPS) of CPS1>100 and CPS2>90. CPS1: minute by minute measures a generating system's ability to match supply to changing demand requirements and support desired system frequency (about 60 cycles per second); CPS2: measures systems ability to limit the magnitude of generation and demand imbalances				
Fiscal Year	2011	2012	2013	2014	2015
Target	> 100 CPS1 rating with CSP2>90	> 100 CPS1 rating with CSP2>90	> CPS1 100 rating with CSP2>90	> 100 CPS1 rating with CSP2>90	CPS 1 > 100; CPS 2 > 90
Result	Met	Met	Met	Met	Met
Endpoint Target	Ensure the integrity of the Nation's integrated grid by operating in compliance with National Energy Reliability Standards.				
Commentary on 2015 Results (Action Plan if Not Met)	CPS1 = 197.98 CPS2 = 99.98				
Documentation, Limitations, Methodology, Validation, and Verification					

Southwestern Power Administration

Southwestern Power Administration

To market and reliably deliver Federal hydropower with preference to public bodies and cooperatives. This is accomplished by maximizing the use of Federal assets to repay the Federal investment and participating with other water resource users in an effort to balance their diverse interests with power needs within broad parameters set by the U.S. Army Corps of Engineers and implementing public policy.

Program	Southwestern Power Administration
Performance Goal (Measure)	SWPA - System Reliability Performance - Outages - Effectively operate the transmission system to limit the number of accountable outages to no more than 3 annually.

Fiscal Year	2011	2012	2013	2014	2015
Target	< 3 accountable outages	≤ 3 accountable outages	< 3 accountable outages	< 3 accountable outages	< 3 accountable outages
Result	Met - 0	Met - 1	Met - 1	Met - 0	Met - 2
Endpoint Target	Southwestern provides reliable service to customers each year, thereby maintaining power system reliability.				
Commentary on 2015 Results (Action Plan if Not Met)	2 accountable outages all year				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Southwestern Power Administration				
Performance Goal (Measure)	SWPA Annual Operating Cost Performance - Provide power at the lowest possible cost by keeping total operation and maintenance expense per kilowatt-hour generated below the national median for public power. (\$/kilowatt hour, kWh)				
Fiscal Year	2011	2012	2013	2014	2015
Target	0.062 \$/kWh	< 0.063 \$/kWh	< 0.063 \$/kWh	< 0.063 \$/kWh	≤ 0.063\$/kWh
Result	Met - 0.0163	Met - 0.0156	Met - 0.0158	Met - 0.0182	Met - .0176/kWh
Endpoint Target	Southwestern will continue to control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.				
Commentary on 2015 Results (Action Plan if Not Met)	\$.0176/kWh				
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Southwestern Power Administration				
Performance Goal (Measure)	SWPA Repayment of the Federal Power Investment Per - 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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	1,306 million dollars UI	1,336 million dollars UI	1,477 million dollars UI	1,477 million dollars UI	≤\$1,387 million dollars AUI

Result	Met - 1,306	Met – 1,336	Met – 1,477	Met – 1,477	Met – 1,387
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.				
Commentary on 2015 Results (Action Plan if Not Met)					
Documentation, Limitations, Methodology, Validation, and Verification					

Program	Southwestern Power Administration				
Performance Goal (Measure)	SWPA System Reliability Performance - NERC - Meet industry averages (CPS1: 162.3 and CPS2: 96.7) and at a minimum, meet NERC Control Performance Standards (CPS) of CPS1>100 and CPS2>90. CPS1: minute by minute measures a generating system's ability to match supply to changing demand requirements and support desired system frequency (about 60 cycles per second); CPS2: measures systems ability to limit the magnitude of generation and demand imbalances.				
Fiscal Year	2011	2012	2013	2014	2015
Target	> 100 CPS1 rating with CSP2>90	> 100 CPS1 rating with CSP2>90	> 100 CPS1 rating and CPS2>90	> 100 CPS1 rating with CSP2>90	CPS1>100; CPS2>90
Result	Met - 199	Met - 187	Met - 186.74	Met - 187.97	Met - 168
Endpoint Target	Southwestern ensures the integrity of the nation's integrated grid by operating in compliance with National Energy Reliability Standards.				
Commentary on 2015 Results (Action Plan if Not Met)	Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 237.2 for CPS1 & 99.7 for CPS2.				
Documentation, Limitations, Methodology, Validation, and Verification					

Western Area Power Administration

Western Area Power Administration

Western markets and delivers reliable, cost-based Federal hydroelectric power and provides related services throughout the central and western United States.

Program	Western Area Power Administration
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Performance Goal (Measure)	WAPA - 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.				
Fiscal Year	2011	2012	2013	2014	2015
Target	≤ 8.52 billion dollars UI	≤ 8.692 billion dollars UI	≤ 8.594 billion dollars UI	≤ 8.667 billion dollars UI	≤ \$8,632 million dollars AUI
Result	Met - 6.136	Met - 6.166	Met - 6.204	Met - 5.476	Data Not Available
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.				
Commentary on 2015 Results (Action Plan if Not Met)	Western will not have the missing data until August 2016. Power Repayment Studies for FY2015 are required to complete the Repayment of Investment Performance metric and they will not be available until August.				
Documentation, Limitations, Methodology, Validation, and Verification	Repayment statistics are compiled annually by project from the most recent final power repayment studies developed by Rates/Power Marketing Offices using audited financial data. These studies identify project investment category totals for unpaid Federal investment (UI) and the amount of allowable unpaid Federal investment (AUI). AUI is the amount of investment for which repayment is not yet required based on the duration of the repayment period. If at any point, the unpaid levels exceed those allowed in accordance with the principles established in RA6120.2, repayment is behind schedule. As to the application of principal in the PRS, generally repayment is applied to the highest interest rate first. However, e.g. if in year 20 of a 20-year investment, AUI is zero, a "required payment" must be made regardless of the interest rate. Note: Annual planned repayment estimates are developed in the PRS, and are based on average hydrology that can vary greatly, adversely impacting both revenue and expenses. Moreover, annual repayment of Federal investment in infrastructure/facilities isn't required, but assumes repayment within the average service life up to a maximum of 50 years. Documentation: Final PRS				

Program	Western Area Power Administration				
Performance Goal (Measure)	WAPA - System Reliability Performance - NERC Rating - WAPA - System Reliability Performance - NERC Rating - System Reliability Performance: Attain acceptable North American Electric Reliability Corporation (NERC) ratings for the following Control Performance Standards (CPS) measuring the balance between power generation and load: 1) CPS1 measures generation/load balance and support system frequency on 1-minute intervals (rating>100); and 2) CPS2 limits any imbalance magnitude to acceptable levels (rating>90).				
Fiscal Year	2011	2012	2013	2014	2015
Target	> 100 CPS1 rating with CPS2>90	> 100 CPS1 rating with CPS2>90	> 100 CPS1 rating, CPS2>90	> 100 CPS1 rating with CPS2>90	CPS1>100; CPS2>90
Result	Met - 164	Met - 165	Met - 152.91	Met - 171.78	Met - 162.18

Endpoint Target	Ensure the integrity of the nation's integrated grid by operating in compliance with National Energy Reliability Standards
Commentary on 2015 Results (Action Plan if Not Met)	CPS1 average: 162.18, CPS2 average: 87.9 Western control areas achieved a "Pass" rating for CPS1 and CPS2 during the 4th quarter of FY 2015. (Note: CPS2 compliance is currently waived to reflect participation in the WECC Reliability-based Control Trial.)
Documentation, Limitations, Methodology, Validation, and Verification	A balancing authority's (BA) ability to balance supply and demand is measured by its area control error (ACE), a real-time value that is continuously tracked in each BA's SCADA system. The NERC CPS establishes the statistical boundaries for ACE values, ensuring the system frequency is always within its scheduled value. CPS1 defines the permissible distribution of all ACE values in an interconnection, based on the expected frequency performance, and must be met 100 percent of the time. CPS2 limits the magnitude of the impact that a BA places on its respective interconnection and must be met at least 90 percent of the time. Per NERC standards, ACE values must be calculated and recorded at least every 4 seconds on a real-time basis. Documentation: NERC Control Performance Report.

Bonneville Power Administration

Bonneville Power Administration

The mission of Bonneville as a public service organization is to provide reliable and adequate power and transmission service at low rates for our customers and constituents in the Pacific Northwest and to mitigate impacts of the federal hydro system on fish and wildlife.

Program	Bonneville Power Administration				
Performance Goal (Measure)	BPA Hydropower Generation Efficiency Performance - Achieve 97% 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. HLHA is actual machine capacity available during heavy-load hours (0700-2200 Monday-Saturday), divided by planned available capacity during heavy-load hours.				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent
Result	Met - 100.6	Met - 102	Met - 102.3	Met - 100.7	Met - 100.6
Endpoint Target	Maintain at least 97.5% Heavy-Load-Hour Availability				
Commentary on 2015 Results (Action Plan if Not Met)	Target Met: Bonneville and its FCRPS partners met this operational goal for the hydropower system with a result of 100.6% through the end of the fourth quarter. 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.				

Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo (from BPA Chief Operating Officer to BPA Administrator).
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Program	Bonneville Power Administration				
Performance Goal (Measure)	BPA Repayment of Federal Power Investment - Meet planned annual repayment of principal on Federal power investments.				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	100 percent
Result	Met - 100	Met - 100	Met - 100	Met - 100	Met - 100
Endpoint Target	Continue to meet planned annual repayment of principal				
Commentary on 2015 Results (Action Plan if Not Met)	Target Met: BPA made a total annual payment of \$891 million of which \$449 million was principal amortization. BPA met this performance target for the 32nd straight year, demonstrating Bonneville's ongoing commitment to meeting its obligations to U.S. taxpayers.				
Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo (from BPA Chief Operating Officer to BPA Administrator).				

Program	Bonneville Power Administration				
Performance Goal (Measure)	BPA 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).				
Fiscal Year	2011	2012	2013	2014	2015
Target	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 percent
Result	Met - 137.93	Met - 132.69	Met - 116.09	Met - 130.39	Met - 139.91
Endpoint Target	Maintain CSP1 score of >= 100				
Commentary on 2015 Results (Action Plan if Not Met)	Target Met: Through the end of the quarter, BPA achieved performance on CPS-1 of 139.91% 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 Bonneville's ongoing commitment and ability to provide reliable transmission for the region.				
Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo (from BPA Chief Operating Officer to BPA Administrator).				