Fiscal Year 2016 Annual Performance Report
Fiscal Year 2018 Annual Performance Plan

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Introduction

The *Fiscal Year (FY) 2016 DOE Annual Performance Report / FY 2018 Annual Performance Plan* contains details of the Department of Energy's (DOE) program performance, showing the historical targets and results from FY 2012 through 2016 and performance targets for FYs 2017 and 2018 for the Department's annual performance goals. It also fulfills the statutory requirements in the Government Performance and Results Act (GPRA) of 1993 and the GPRA Modernization Act of 2010 related to production of an annual report on past program performance and an annual performance plan. Performance targets for FY 2016 were revised from the FY 2016 Congressional Budget Request to reflect changes due to enacted appropriations. The Consolidated Appropriations Act was not available when the Department of Energy developed the FY 2018 Congressional Budget. Therefore, FY 2017 performance targets reflect the P.L. 114-254 continuing resolution level annualized to a full year. FY 2018 performance targets reflect the FY 2018 Budget Request level.

Mission

The mission of the Department of Energy is to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.

Overview

The DOE enterprise is comprised of approximately 14,000 federal employees and over 90,000 management and operating contractor and other contractor employees at the Department's headquarters in Washington, D.C. and 83 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 thousands of researchers from academia, government, and industry. The range, scale, and excellence of science and technology (S&T) at the DOE laboratories provide strategic assets to accomplish DOE missions, support government responses to unforeseen domestic and international emergencies, and provide technical capabilities to help shape the global S&T agenda.

DOE is responsible for advancing the energy, environmental, and nuclear security of the United States; promoting scientific and technological innovation in support of that mission; sponsoring basic research in the physical sciences; and ensuring the environmental cleanup of the nation's nuclear weapons complex.

DOE Organization

In response to changing needs and an extended energy crisis, Congress passed the Department of Energy Organization Act in 1977, creating one of the most diverse agencies in the federal Government. The 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, construction, and testing of nuclear weapons. 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 (R&D) 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.

The Department's organizational chart is located at http://energy.gov/about-us/organization-chart.

Strategic Framework

The FY 2016 Annual Performance Report is a retrospective description of activities in pursuit of strategic goals. The FY 2018 Annual Performance Plan is a projection of FY 2018 activities based in part on the FY 2018 Budget Request. By law, the Plan and Report are based on the 2014-2018 DOE Strategic Plan. The plan is available at http://www.energy.gov/downloads/2014-2018-strategic-plan. In accordance with statutory requirements, the Administration will develop a new strategic plan in 2018 and will determine the objectives it will pursue in the 2018-2022 Strategic Plan.

The three DOE strategic goals presented in the 2014-2018 DOE Strategic Plan are:

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 (Obama) Climate Action Plan to mitigate the risks of and enhance resilience against climate change.

2. **Nuclear Security** - Strengthen national security by maintaining and modernizing the nuclear stockpile and 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 requires in part that agencies focus on a limited number of near-term agency priority goals. The table below summarizes the progress on DOE's 2016 agency priority goals as of September 30, 2016, and does not necessarily represent the goals of the new Administration or work it will pursue in FY 2017.

Program/ Goal Leader(s)	Goal Statement	Performance Measures	FY 2016 Result
Nuclear Security Lt. Gen. Frank Klotz David Huizenga Philip Calbos	To modernize the nation's existing nuclear weapons stockpile, make progress toward the completion of life extension programs consistent with the Nuclear Posture Review and manage nonproliferation actions to prevent, counter, and respond to global nuclear and radiological threats.	Complete at least 70% of the W76-1 production unit builds by the end of 2016, and 80% by the end of 2017.	**On-Track** – DOE met the goal of at least 70% of the W76-1 Life Extension Program (LEP) production unit builds as represented in the annual Selected Acquisition Report (SAR).
		Achieve B61-12 Phase 6.4 authorization to initiate production-engineering activities by the end of FY 2016, and achieve B61-12 First System Qualification Flight Test by the end of FY 2017.	**On-Track** – DOE exceeded FY 2016 expectations for the B61-12 LEP. A fourth quarter accomplishment was the early achievement of entry to Phase 6.4 and approval by NNSA to initiate B61-12 LEP production engineering activities.
		Complete delivery and installation of a cumulative total of 755 fixed, mobile, and man-portable radiation detection systems by the end of FY 2017.	**On-Track** – DOE/National Nuclear Security Administration (NNSA) Global Material Security's (GMS) Nuclear Smuggling Detection and Deterrence (NSDD) program deployed 52 radiation detection systems in FY 2016, for a cumulative total of 723 systems. This exceeded the FY 2016 cumulative target of 716 fixed and mobile detection systems.
Energy Policy Steve Chalk Alexander Mishkin Carol Battershell Patricia Hoffman	To enable cost-competitive, clean energy technologies and resilient energy infrastructure consistent with the Climate Action Plan, Quadrennial Energy Review (QER), and Quadrennial Technology Review (QTR).	Issue final energy standards that meet the Climate Action Plan goal of 3 GT total cumulative CO_2 reduction by 2030.	**On-Track** –DOE issued rules to be that contributed towards meeting the target.
		Issue new conditional loan guarantee commitments, as appropriate, of up to $8.5 billion for advanced fossil energy and $4.5 billion for renewable energy and efficient electricity technologies that include distributed energy and storage systems by the end of FY 2017.	**On-Track** – Loan Program Office (LPO) accepted applications in response to open Title XVII solicitations.

Program/ Goal Leader(s)	Goal Statement	Performance Measures	FY 2016 Result
		Solicit additional applications, and as appropriate, issue new conditional loan commitments to increase fuel efficient vehicle and advance vehicle component manufacturing.	**On-Track** – The Advanced Technology Vehicles Manufacturing (ATVM) loan program reviewed applications upon receipt. In FY 2016 one applicant was issued a conditional commitment for a loan request totaling approximately $259 million.
		Issue semiannual implementation reports on *Transforming U.S. Energy Infrastructures in a Time of Rapid Change.*	**On-Track** – Implementation report card was developed, and a total of 29 recommendations were implemented.
		Develop and issue the second installment of the QER on the electricity system as a whole by the end of CY 2016.	**On-Track** – The Office of Energy Policy and Systems Analysis (EPSA) worked with the White House and interagency partners to develop the second installment of the QER, including completing the analytical phase and conducting interagency coordination.
		Develop a clean energy technology R&D portfolio reflecting the analysis and assessments of the QTR for the President's FY 2017 Budget.	**Met** – Completed synthesis and integration of QTR analytical input into FY 2017 Request and released the Budget to Congress on February 9, 2016.
High Performance Computing Lt. Gen. Frank Klotz Patricia Hoffman	Contributes to implementation of the President's Executive Order establishing the National Strategic Computing Initiative (NSCI) including accelerating delivery of a capable exascale computing system that integrates hardware and software capability to deliver approximately 100 times the performance of current 10 petaflop systems across a range of applications representing government needs, and establishes a viable path forward for future High Performance Computing systems even after the limits of	By Q2 FY 2016, establish a multiyear exascale research program plan in support of DOE's contribution to the President's high performance computing initiative.	**Met** – Completed. The NSCI Implementation Plan was submitted to the co-chairs of the NSCI Executive Council on October 26, 2015.
		By the end of FY 2017, identify software technology investments needed to accelerate delivery of a capable exascale system.	**On-Track** – During FY 2016 exascale applications requirements for SC/NNSA program offices were gathered, reviewed, and finalized.
		By Q4 FY 2017 establish a plan for DOE's contribution to research of new progressive technologies that perform beyond Moore's Law.	**On-Track** – During FY 2016 a draft plan for a research program into technologies beyond Moore's Law was developed and presented to the National Strategic Computing Initiative Working Group, the Quantum Information Systems Working Group, and OMB.

Program/ Goal Leader(s)	Goal Statement	Performance Measures	FY 2016 Result
	current semiconductor technologies are reached.		
Environmental Management and Nuclear Waste Disposal Sue Cange Gena Cadieux Patricia Hoffman Ray Furstenau	To support the long-term goal of safely managing cleanup and storage of nuclear materials consistent with the President's March 2015 determination to dispose of nuclear waste separate from civilian used nuclear fuel while achieving efficiencies.	Restart waste emplacement at the Waste Isolation Pilot Plant (WIPP) by the end of Q1 FY 2017.	**On-Track** – DOE continued activities necessary to support the resumption of waste emplacement operations at WIPP.
		Meet production milestones at the Defense Waste Processing Facility at Savannah River of 120 canisters of vitrified high-level waste in FY 2016 and 110 canisters in FY 2017.	**On-Track** – The Defense Waste Processing Facility at Savannah River Site produced a total of 133 high level waste canisters at Savannah River Site through September 2016.
		Complete demolition to achieve slab on grade of the Plutonium Finishing Plant at Richland by the end of calendar year 2016.	**Off-Track** – As of the end of FY 2016 the status of the facilities for demolition was: • The Americium Recovery Facility is 99.8% ready for demolition; • The Plutonium Reclamation Facility is approximately 98% ready for demolition; • The Plutonium Fabrication Facility is approximately 64% ready for demolition.
		Begin treatment of radioactive liquid waste at the Integrated Waste Treatment Unit (IWTU) at Idaho by the end of FY 2016.	**Off-Track** – The IWTU was in an outage to complete modifications that are expected to facilitate radioactive operations.
		Complete the Deep Borehole Field Test (DBFT) Characterization Borehole by February 2017.	**Off-Track** – A revised strategy to acquire a Field Test Site was developed.
		Develop and publish the phased and adaptive consent-based siting strategy for the first Phase of the siting process by the end of FY 2017.	**On-Track** – A draft report titled "Designing a Consent-Based Siting Process: Summary of Public Input" was issued publicly on September 14, 2016 for a second public comment period.
		Initiate engagement with communities and stakeholders interested in developing a consent-based siting process for integrated waste management system facilities; complete and publish a report that reflects the inputs received, documenting the priorities,	**On-Track** – DOE issued a Federal Register invitation for public comment, developed a website for promoting communications on consent-based siting, and hosted a series of eight public meetings around the country, beginning and ending with a "kick-off meeting" and "summary of public input meeting" in January and September, respectively in

Program/ Goal Leader(s)	Goal Statement	Performance Measures	FY 2016 Result
		comments and concerns expressed throughout the development process by Dec 2016.	Washington, D.C. DOE received over 10,000 comments from the Federal Register invitation for public comment. These comments were organized and summarized in a draft report titled "Designing a Consent-Based Siting Process: Summary of Public Input".
		Complete a review of the existing transportation cask Certificates of Compliance (COC) by FY 2017 in order to identify items for confirmation and/or resolution prior to transportation of spent nuclear fuel.	**On-Track** – Review of the existing transportation cask Certificates of Compliance was underway in FY 2016.
Capital Projects Gena Cadieux Paul Bosco	To manage DOE Capital Asset Projects effectively in support of DOE national security, clean energy, and cleanup goals and complete DOE capital asset projects within scope, schedule, and cost.	Complete 90% of DOE post-Critical Decision (CD)-3, Approve Start of Construction or Execution, capital asset projects within 110% of the cost baseline in effect as of the start of FY 2016.	**On-Track** –100% of projects were within their current cost baseline in effect as of the start of FY 2016.
National Laboratories Gena Cadieux Patricia Hoffman Lt. Gen. Frank Klotz	To deliver the highest quality R&D and production capabilities, strengthen partnerships with DOE headquarters, and improve management of the physical infrastructure of the national laboratories to enable efficient leadership in science, technology, and national security	By the end of FY 2017, the percentage of assessed DOE laboratory facilities categorized as "adequate" will increase by 2 percentage points from the FY 2015 baseline.	**On-Track** – DOE is on track to meet our goal by the end of FY 2017. The DOE Infrastructure Executive Committee has been meeting regularly and is focused on improving DOE's aging core general purpose infrastructure. DOE programs are working to ensure appropriate investments in active assets required for mission adequacy and functionality and the reduction in the backlog of deficiencies. DOE programs are also working to retire to inactive status or declare excess those assets that are beyond their lifecycle or do not support mission adequacy and functionality.
		Sponsor an annual "National Laboratory Big Ideas Summit" in FY 2016 and FY 2017.	**On-Track** – Held FY 2016 Summit.

Program/ Goal Leader(s)	Goal Statement	Performance Measures	FY 2016 Result
		Develop and implement a consistent, annual process to track and assess laboratory planning and evaluation.	**On-Track** – Laboratory planning and evaluation progressed, including implementation of SC best practices.

Cross-Agency Priority Goals

Per the GPRA Modernization Act requirement to address Cross-Agency Priority (CAP) Goals in the annual performance plan and the annual performance report, please refer to www.Performance.gov for the agency's contributions to those goals and progress, where applicable. The Department currently contributes to the following CAP Goals:

Management Goals:

- Economic Growth: Lab-to-Market (Lead agency)
- Category Management
- Benchmark and Improve Mission-Support Operations
- People & Culture

Mission Goals:

- Cybersecurity
- The Freedom of Information Act (FOIA)
- Climate Change (Federal Action)
- Insider Threat and Security Clearance
- Job-Creating Investment
- Infrastructure Permitting Modernization
- STEM Education

Cross-Agency Collaborations

The Department of Energy collaborates with state, local, and tribal governments and other federal agencies to effectively position the Department to achieve its goals and objectives. As noted above, DOE collaborates with other federal agencies in support of achieving CAP goals. DOE also participates in numerous interagency working groups.

Management Review

In FY 2016, the Department met the GPRA Modernization Act requirement for quarterly data driven executive review of Agency Priority Goals through a meeting known within the Department as the Business Quarterly Review (BQR). The BQR was attended by DOE senior leadership and Goal Leaders; program-office management and subject matter experts attend as needed. Senior leadership is informed of the Department's progress over the past quarter and of any impending challenges that might disrupt program success. In addition, these meetings provided an opportunity for senior leadership to ask in-depth questions of program management and for programs to request assistance from the highest levels of the Department.

Fiscal Year 2015 Unmet Performance Targets

The following table displays performance measures where the FY 2015 target was not met, the FY 2016 status, and whether the measure was discontinued.

Program	FY 2015 Performance Goal	FY 2016 Performance Status
NNSA Weapons Activities / Directed Stockpile Work	**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. FY 2015 Target: 100% Result: 66%	**Met** FY 2016 Target: 100% Result: 102%
	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). FY 2015 Target: 100% Result: 85%	**Met** FY 2016 Target: 100% Result: 100%
NNSA Defense Nuclear Nonproliferation / Global Material Security (formerly International Material Protection and Cooperation)	**Mobile Detection System (MDS) –** Cumulative number of Mobile Detection Systems (MDS) deployed. FY 2015 Target: 97 Result: 96	**Met** FY 2016 Target: 117 Result: 117
	Sustainability – Cumulative number of radiation detection systems that are being indigenously sustained. FY 2015 Target: 490 Result: 488	**Not Met** FY 2016 Target: 558 Result: 538
NNSA Defense Nuclear Nonproliferation / Material Management and Minimization	**U.S. Plutonium Disposition (H-Canyon) –** Cumulative kilograms of plutonium converted to oxide at Savannah River H-Canyon FY 2015 Target: 100 Result: 1.8	**Not Met** FY 2016 Target: 100 Result: 7.62

Program	FY 2015 Performance Goal	FY 2016 Performance Status
(formerly Fissile Materials Disposition)	**U.S. Plutonium Disposition (LANL)** – Cumulative kilograms of plutonium metal converted to oxide at Los Alamos National Laboratory FY 2015 Target: 792 Result: 667	**Met** FY 2016 Target: 667 Result: 667
EERE Wind	**Wind – Offshore –** Cost of fixed-bottom off-shore wind energy (cents/kWh) FY 2015 Target: 19.9 cents/kWh Result: 20.8 cents/kWh	**Met** FY 2016 Target: 19.5 cents/kWh Result: 18.1 cents/kWh
LPO Loan Programs	**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)) FY 2015 Target: 16,400,000 mt of CO2 avoided Result: 13,100,000 mt of CO2 avoided	**Not Met** FY 2016 Target: 21,200,000 mt of CO2 avoided Result: 18,300,000 mt of CO2 avoided
	Generation Capacity of Projects Receiving Loan Guarantees– Annual generation capacity from projects receiving DOE loan guarantees that have achieved commercial operations. (Gigawatts (GW)) FY 2015 Target: 4.0 GW Result: 3.82 GW	**Met** FY 2016 Target: 4.0 Gigawatts Result: 4.0 GW
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 2015 Target: 80% Result: 77%	**Met** FY 2016 Target: 80% Result: 82.6%

Program	FY 2015 Performance Goal	FY 2016 Performance Status
Science Fusion Energy Sciences	**FES Facility Operations –** Average achieved operation time of FES user facilities as a percentage of total scheduled annual operation time FY 2015 Target: 90% Result: 65%	**Met** FY 2016 Target: 90% Result: 111%
Science High Energy Physics	**HEP Neutrino Model –** Carry out series of experiments to test the standard 3-neutrino model of mixing FY 2015 Target: 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: Not met	**Met** FY 2016 Target: Physics analyses results from data-taking will be presented by the NOvA and MicroBooNE experimental collaborations at the FY 2016 summer conferences. Result: Met
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 2015 Target: Cumulative total of 93,624 metric tons packaged Result: Cumulative total of 79,232 metric tons packaged	**Not Met** FY 2016 Target: Cumulative total of 97,256 metric tons packaged Result: Cumulative total of 80,221 metric tons packaged
	Liquid Waste – Thousands of gallons eliminated FY 2015 Target: Cumulative total of 7,592 thousand gallons eliminated Result: Cumulative total of 6,592 thousand gallons eliminated	**Not Met** FY 2016 Target: Cumulative total of 7,425 thousand gallons eliminated Result: 7,270 thousand gallons eliminated
	Liquid Waste Tanks Closed – Close a cumulative total of liquid waste tanks. FY 2015 Target: Cumulative total of 15 tanks closed Result: Cumulative total of 14 tanks closed	**Met** FY 2016 Target: Cumulative total of 15 tanks closed Result: Cumulative total of 15 tanks closed

Program	FY 2015 Performance Goal	FY 2016 Performance Status
Environmental Management Waste Management	**High Level Waste Packaged for Disposition –** Package for disposition a cumulative total of high level waste. FY 2015 Target: Cumulative total of 4,405 canisters packaged Result: Cumulative total of 4,241 canisters packaged	**Not Met** FY 2016 Target: Cumulative total of 4,391 canisters packaged Result: Cumulative total of 4,366 canisters packaged
	TRU Waste – Disposition of a cumulative total of cubic meters of transuranic waste consisting of Remote Handled TRU and Contact Handled TRU FY 2015 Target: Cumulative total of 102,591 cubic meters dispositioned Result: Cumulative total of 102,026 cubic meters dispositioned	**Met** FY 2016 Target: Cumulative total of 102,026 cubic meters dispositioned Result: 103,442 cubic meters dispositioned
	Release Site Remediation Completions – Complete remediation work at a cumulative total of release sites FY 2015 Target: Cumulative total of 8,201 release sites completed Result: Cumulative total of 8,021 release sites completed	**Not Met** FY 2016 Target: Cumulative total of 8,340 release sites completed Result: Cumulative total of 8,119 release sites completed
	Nuclear Facility Completions (number of facilities) – Complete remediation work at a cumulative total of nuclear facilities. FY 2015 Target: Cumulative total of 153 nuclear facilities completed Result: Cumulative total of 151 nuclear facilities completed	**Not Met** FY 2016 Target: Cumulative total of 160 nuclear facilities completed Result: Cumulative total of 151 nuclear facilities completed
Chief Information Officer	**Anti-Phishing and Malware Defense (APMD) –** Implement technologies, processes, and training that reduces the risk of malware being introduced through email and malicious or compromised web sites.	**Not Met** FY 2016 Target: 71% Result: 61%

Program	FY 2015 Performance Goal	FY 2016 Performance Status
	FY 2015 Target: 59% Result: 51%	
	Strong Authentication - Personal Identity Verification (PIV) – Implement a set of capabilities that ensures users must authenticate to information technology resources and have access to only those resources that are required for their job function. FY 2015 Target: 26% Result: 23%	**Not Met** FY 2016 Target: 93% Result: 47%
	IT Transformation – Implement the plan to transform the delivery of commodity IT services (people & processes) to achieve cost savings. FY 2015 Target: $4.834M Result: $1.41M	**FY 2016 Measure Discontinued –** The IT Commodity Savings initiatives ended Q4 FY 2015.
	IT Sustainability and Data Center Optimization – Generate savings through implementation of a 10% enterprise IT consolidation (e.g., servers) and sustainability plan and optimization of Federally-managed data centers. FY 2015 Target: $12M Result: $1.52M	**FY 2016 Measure Discontinued –** The IT Sustainability and Data Center savings initiatives ended Q4 FY 2015.
Departmental Management	**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 FY 2015 Target: 90% Result: 78%	**Not Met** FY 2016 Target: 90% Result: 91%
	Reduce travel expenses – Reduce non-mission essential travel expenses FY 2015 Target: 30% Result: 28.6%	**Met** FY 2016 Target: 30% Result: 30%
Human Capital	**Annual reductions in the average time-to-hire –** Annual reductions in the average time-to-hire (both agency-wide and for each HR office) from 174 days in FY09 to	**Not Met** – Did not meet annual goal of 80 days.

Program	FY 2015 Performance Goal	FY 2016 Performance Status
	100 days or less by end of FY 2011, and further to 80 days by end of FY 2012. FY 2015 Target: 80 days Result: 98.7 days	FY 2016 Target: 80 days Result: 106.5 days

Performance Goals Discontinued as of Fiscal Year 2016

The following table displays the performance measures which were discontinued following the close of FY 2015 and the reason for their discontinuation.

Program	Performance Goals Discontinued as of FY 2016	Rationale
NNSA Naval Reactors	A1B Reactor Plant Design - Cumulative percentage of completion on the next-generation aircraft carrier reactor plant design. FY15 Target: 100% Complete – Met.	Measure Fully Completed
NNSA Weapons Activities / Directed Stockpile Work	Key Extreme Experiments - Cumulative percentage of progress towards achievement of key extreme experimental condition of matter needed for predictive capability for nuclear weapons performance. FY15 Target: 100% of progress (cumulative) – Met.	Measure Fully Completed
NNSA Defense Nuclear Nonproliferation/ International Material Protection and Cooperation	MPC&A Initiatives - Annual number of total upgrade and sustainability initiatives completed and transitioned to host country. FY15 Target: 7 Initiatives Completed – Met.	Work Discontinued
	MPC&A Upgrades – Buildings - Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades. FY15 Target: 221 Buildings – Met.	Measure Fully Completed
	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”). FY15 Target: 100% of progress – Met.	Measure Fully Completed

Program	Performance Goals Discontinued as of FY 2016	Rationale
	WSB - Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building (WSB). FY15 Target: 100% Completed – Met.	Measure Fully Completed
EERE Advanced Manufacturing Office (AMO)	AMO - Advanced Manufacturing R&D Projects - Demonstrate 2 new manufacturing process technologies with the potential to improve manufacturing productivity through a measureable (> 25%) increase in energy efficiency FY15 Target: 2 processes – Met.	Streamlined to one goal per program.
EERE Bioenergy Technologies	Conversion Cost - Reduce modeled conversion cost for feedstock to gasoline/diesel fuel via a bio-oil pathway ($2011, $/gallons of gasoline equivalent, gge) FY15 Target: $3.7/gge – Exceeded.	Streamlined to one goal per program.
	Feedstock Logistics Cost - Demonstrate a modeled mature delivered feedstock cost of $115 dollars per dry matter ton (including both grower payment and logistics) FY15 Target: $115 – Met.	Streamlined to one goal per program.
EERE Building Technologies	Standards - Final Rules - Reduce cumulative carbon pollution by 2030 through standards set for consumer products and industrial equipment between 2009 and the end of calendar year 2016. (Cumulative million metric tons of CO2 (mmt/CO2) equivalent through 2030) FY15 Target: 2400 mmt/CO2 – Met.	Elevated to Agency Priority Goal.
EERE Hydrogen	Hydrogen and Fuel Cell Technology – Cost - Reduce the cost of hydrogen FY15 Target: 6.8 gge – Met.	Streamlined to one goal per program.
EERE Solar	Concentrated Solar Power (CSP) - Reduce the levelized cost of Concentrated Solar Power energy at utility scale (cents / kilowatt hour, kWh)	Streamlined to one goal per program.

Program	Performance Goals Discontinued as of FY 2016	Rationale
	FY15 Target: 13 - Met.	
EERE Vehicle Technologies	Electric Drive - Reduce the cost of electric-drive technologies ($/kilowatt, kW, peak power) FY15 Target: 12 $/kWh – Met.	Streamlined to one goal per program.
	Powertrain - Improved fuel economy from advances in engine efficiency (% passenger vehicle/commercial vehicle) FY15 Target: 25% - Met.	Streamlined to one goal per program.
Science Fusion Energy Sciences	Construction/MIE Cost & Schedule - Cost-weighted mean percent variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects. FY15 Target: Less than 10% - Met.	No major construction, upgrade, or equipment procurement projects.
Chief Information Officer	IT Transformation – Implement the plan to transform the delivery of commodity IT services (people & processes) to achieve cost savings. FY15 Target: $4.834M – Not Met.	Beginning in FY 2016 all Data Center Optimization Initiative (DCOI) performance metrics are tracked and reported in the Department's DCOI Strategic Plan.
	IT Sustainability and Data Center Optimization – Generate savings through implementation of a 10% enterprise IT consolidation (e.g., servers) and sustainability plan and optimization of Federally-managed data centers. FY15 Target: $12M – Not Met.	Beginning in FY 2016 all Data Center Optimization Initiative (DCOI) performance metrics are tracked and reported in the Department's DCOI Strategic Plan.

Program Inventory

The following table presents the FY 2016 inventory of DOE programs and shows the relationship between the DOE strategic goals, objectives, and program activities. It also indicates the Progress Category assigned during the FY 2015-16 Strategic Review.

Goal	Objective	Strategies	Program Activity
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	**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 **Strategic Review Progress Category:** Noteworthy Progress	• Improve energy productivity by increasing efficiency • Advance options for diverse energy resources and conversion devices for power • Leverage increased private sector financing for deployment of "all of the above" energy technologies • Accelerate development and deployment of new transportation system technologies to diversify fuel sources, increase efficiency and reduce emissions • Support environmentally responsible development, delivery and use of domestic petroleum and natural gas • Contribute to international efforts to address global climate change	Advanced Research Projects Agency-Energy Electricity Delivery and Energy Reliability Energy Efficiency and Renewable Energy Energy Information Administration Energy Policy and Systems Analysis Fossil Energy Indian Energy Policy and Programs International Affairs Loan Programs Nuclear Energy Power Marketing Administrations Science
	Strategic Objective 2 – Support a more economically competitive, environmentally responsible, secure and resilient U.S. energy infrastructure **Strategic Review Progress Category:** Noteworthy Progress	• Support the Quadrennial Energy Review (QER) • Develop technologies to modernize the electric grid to improve resiliency, flexibility, and better integrate "all of the above" generation resources • Strengthen the effectiveness of Department of Energy incident management capabilities • Manage the Strategic Petroleum Reserve and be prepared to respond to petroleum market supply disruption	

Goal	Objective	Strategies	Program Activity
		• Improve cybersecurity in the energy sector through effective government-industry collaboration • Work with states, localities and other stakeholders to develop climate change prevention/adaptation resilience strategies	Office of Technology Transitions
	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 **Strategic Review Progress Category:** Noteworthy Progress	• Conduct discovery-focused research to increase our understanding of matter, materials and their properties through partnerships with universities, national laboratories, and industry • Provide the nation's researchers with world-class scientific user facilities that enable mission-focused research and advance scientific discovery • Use the national laboratory system and leverage partnerships with universities and industry to conduct mission-focused research	
2. Nuclear Security: Strengthen national security by maintaining the nuclear stockpile and modernizing nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion,	**Strategic Objective 4 –** Maintain the safety, security and effectiveness of the nation's nuclear deterrent without nuclear testing **Strategic Review Progress Category:** Noteworthy Progress	• NNSA will continue to work closely with the Department of Defense (DoD), through the Joint DoD/DOE Nuclear Weapons Council (NWC), to modernize the stockpile through timely execution of approved life extension programs, as outlined in the Stockpile Stewardship and Management Plan (SSMP).	National Nuclear Security Administration Intelligence and Counter-intelligence International Affairs

Goal	Objective	Strategies	Program Activity
improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities	**Strategic Objective 5 –** Strengthen key science, technology, and engineering capabilities and modernize the national security infrastructure **Strategic Review Progress Category:** Noteworthy Progress	• DOE provides the experimental and computational capability and infrastructure required to execute the Stockpile Stewardship and Management Program and other DOE national security missions.	
	Strategic Objective 6 – Reduce global nuclear security threats **Strategic Review Progress Category:** Noteworthy Progress	• The Department pursues this objective by: providing policy and technical leadership to remove and eliminate, or secure and safeguard the most vulnerable nuclear materials worldwide; limiting or preventing the transfer and trafficking of weapons of mass destruction, WMD-related materials, technology, and expertise; advancing national and international technical capabilities to understand and detect foreign nuclear weapons production and detonation; and developing a comprehensive science-based predictive model for a broad range of nuclear threat devices.	
	Strategic Objective 7 – Provide safe and effective integrated nuclear propulsion systems for the U.S. Navy **Strategic Review Progress Category:** Noteworthy Progress	• DOE provides the design, development, and operational support required to provide militarily effective nuclear propulsion plants and ensure their safe, reliable, and long-lived operation.	

Goal	Objective	Strategies	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 capabilities to pursue departmental missions	**Strategic Objective 8 –** Continue cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities **Strategic Review Progress Category:** Focus Area for Improvement	• Successful cleanup depends on overcoming technical, quality assurance, schedule, regulatory, and management challenges.	Environmental Management Legacy Management Chief Financial Officer Chief Human Capital Officer Chief Information Officer Congressional and Inter-governmental Affairs Economic Impact and Diversity General Counsel Environment, Health, Safety and Security Enterprise Assessments Hearings and Appeals Inspector General Management Public Affairs
	Strategic Objective 9 – Manage assets in a sustainable manner that supports the DOE mission **Strategic Review Progress Category:** Neither	• Mission objectives, energy efficiency, and sustainability principles will drive decisions on capital infrastructure, real property, and information technology.	
	Strategic Objective 10 – Effectively manage projects, financial assistance agreements, contracts, and contractor performance **Strategic Review Progress Category:** Noteworthy Progress	• Contract provisions are being incorporated into contracts that will enhance the oversight of contractor cost and technical performance systems and ensure contractors are not rewarded unless performance standards and requirements are met.	
	Strategic Objective 11 – Operate the DOE enterprise safely, securely, and efficiently **Strategic Review Progress Category:** Noteworthy Progress	• Rigorous self-analysis is employed, including performance evaluations and testing conducted independent of site or headquarters line management.	

Goal	Objective	Strategies	Program Activity
	Strategic Objective 12 – Attract, manage, train, and retain the best federal workforce to meet future mission needs **Strategic Review Progress Category:** Neither	• DOE is committed to improving human capital policies, programs, and systems through a corporate approach that reduces organizational redundancies and uses capable and cost-effective information technology systems.	

Lower-Priority Program Activities

The President's Budget identifies the lower-priority program activities, where applicable, as required under the GPRA Modernization Act, 31 U.S.C. 1115(b)(10). The public can access the volume at: http://www.whitehouse.gov/omb/budget.

Evaluations Completed in Fiscal Year 2016

The following table displays the independent program evaluations that were completed in FY 2016 and their location (where available).

Office	Program, Topic or Area Evaluated	Name of Evaluation	Evaluator	Hyperlink to Evaluation
EERE Advanced Manufacturing Office (AMO)	RD&D Portfolio	2016 AMO Peer Review	AMO Peer Review Committee	Not yet available.
EERE BioEnergy Technologies Office (BETO)	RD&D Portfolio	2015 BETO Peer Review (Completed & Published in 2016)	BETO Peer Review Committee	https://www.energy.gov/sites/prod/files/2016/04/f30/2015_peer_review_report.pdf
EERE Building Technologies Office (BTO)	Emerging Technologies Program and the Commercial and Residential Buildings Integration Programs	2016 BTO Peer Review	BTO Peer Review Committee	https://energy.gov/sites/prod/files/2016/12/f34/2016%20BTO%20Peer%20Review%20Report.pdf

Office	Program, Topic or Area Evaluated	Name of Evaluation	Evaluator	Hyperlink to Evaluation
EERE Fuel Cells Technologies Office (FCTO)	Entire Program	2016 Annual FCTO Peer Evaluation	FCTO Peer Review Committee	https://www.hydrogen.energy.gov/annual_review16_report.html
EERE Vehicle Technologies Office (VTO)	Entire Program	2016 Annual VTO Peer Evaluation	VTO Peer Review Committee	https://energy.gov/eere/vehicles/downloads/vehicle-technologies-office-2016-annual-merit-review-report
Technology to Market Office in the EERE Office of Strategic Programs	Lab impacts	Baseline and Process Evaluation of Small Business Vouchers Pilot, December 2016	Research Into Action Inc., NMR Group Inc., 360 Innovation LLC, East Mountain IP, and Albert Link	https://energy.gov/eere/analysis/downloads/baseline-and-process-evaluation-small-business-vouchers-pilot
Technology to Market Office in the EERE Office of Strategic Programs	Lab impacts	Evaluation of the Lab-Corps Pilot – final report, November 2016	Research Into Action Inc., NMR Group Inc., 360 Innovation LLC, East Mountain IP, and Albert Link	https://energy.gov/eere/analysis/downloads/evaluation-lab-corps-pilot-final-report
Fossil Energy	Carbon Capture and Advanced Energy Systems	"System Analysis and Cost Estimate for a PC Plant with Post-Combustion Carbon Capture"	Booz Allen Hamilton, Inc. Richard Newby, Alex Zoelle, Dale Keairns	N/A for public release.
SC/STTR	Assess the Small Business Technology Transfer Program (STTR) Programs[1] as required by HR-1540, Section 1537 (Public Law 112-81).	An assessment of the Small Business Technology Transfer Program	National Academies of Sciences, Engineering, and Medicine	https://www.nap.edu/catalog/21826/sttr-an-assessment-of-the-small-business-technology-transfer-program
SC/ASCR	Assess the management processes for the ASCR Next	Committee of Visitors review of Advanced	Advanced Scientific Computing Advisory	https://science.energy.gov/~/media/sc-2/pdf/cov-ascr/2015/

[1] The assessment covered the STTR program at the five participating agencies: DOD, DOE, HHS, NASA, and NSF.

Office	Program, Topic or Area Evaluated	Name of Evaluation	Evaluator	Hyperlink to Evaluation
	Generation Networking for Science (NGNS) program.	Networking Research Program	Committee (ASCAC)	ASCR_COV_2015_NGNS_Report.pdf
SC/NP	Assess the operations of the SC Nuclear Physics Program (NP) for fiscal years 2013-2015.	Committee of Visitors review of the Office of Nuclear Physics	Nuclear Science Advisory Committee (NSAC)	https://science.energy.gov/~/media/sc-2/pdf/cov-np/2016/NP_COV_2016_Report.pdf
SC/BES	Assess the operations of the BES Scientific User Facilities Division (SUFD) for fiscal years 2013-2015.	Committee of Visitors review of the Scientific User Facilities Division	Basic Energy Sciences Advisory Committee (BESAC)	https://science.energy.gov/~/media/sc-2/pdf/cov-bes/2016/BES_COV_2016_SUFD_Report.pdf
SC/BER	Assess the management of the Biological and Environmental Research (BER) Climate and Environmental Sciences Division (CESD) for Fiscal Years 2013-2015.	Committee of Visitors review of the BER Climate and Environmental Sciences Division	Biological and Environmental Research Advisory Committee (BERAC)	https://science.energy.gov/~/media/sc-2/pdf/cov-ber/2016/BER_COV_2016_CES_Report.pdf
NNSA NA-194, Uranium Program Office	Execution of the NNSA Uranium Program	2016 Peer Review of the NNSA Uranium Program	TEAM LEAD: Dr. Cecil Parks, Director, Nuclear Security and Isotope Technology Division, Oak Ridge National Laboratory (ORNL)	N/A. Copy available on request to the program.
NNSA NA-191: B61-12 LEP, W88 ALT 370, W80-4 LEP	Needed staffing levels to support life extension programs	Independent Review of Federal Workforce Requirements to Support Life	TEAM LEAD: Donald Trost, Executive Vice President, TechSource:	N/A. Copy available on request to the program.

Office	Program, Topic or Area Evaluated	Name of Evaluation	Evaluator	Hyperlink to Evaluation
		Extension Programs	Science and Engineering Consultants	
NNSA NA-191.3, W80-4 LEP	W80-4 LEP warhead selection process	Independent Review of the W80-4 Warhead Selection Process	TEAM LEAD: David Ferguson, Project Engineer, The Aerospace Corp	N/A. Copy available on request to the program.
DNN/MMM/ Convert	Mo-99 Program	Molybdenum-99 for Medical Imaging	National Academies of Sciences	https://www.nap.edu/catalog/23563/molybdenum-99-for-medical-imaging
DNN/MMM/ Convert	Reactor Conversion Program	Reducing the Use of Highly Enriched Uranium in Civilian Research Reactors	National Academies of Sciences	https://www.nap.edu/catalog/21818/reducing-the-use-of-highly-enriched-uranium-in-civilian-research-reactors
DNN/MMM/ Convert	Mo-99 Program	Nuclear Science Advisory Committee	Annual Assessment of the NNSA M3 Mo-99 Program	https://science.energy.gov/~/media/np/nsac/pdf/docs/2016/Mo-99_NSAC-approved-2016.pdf

Goals to Address Management Priorities

The FY 2016 Agency Financial Report, available at https://energy.gov/cfo/downloads/fy-2016-doe-agency-financial-report, provides a complete description of DOE's Management Priorities and steps as well as a discussion of progress to date and planned actions to address these priorities.

The table below provides a summary of the challenge along with the related performance goals and milestones, and the responsible DOE official.

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
1. Contract and Project Management: The Department is the largest civilian contracting agency in the federal Government and spends approximately 90% of its annual budget on contracts to operate its scientific laboratories, engineering and production facilities, and environmental restoration sites and to acquire capital assets. The Department has been challenged, both externally and internally, to improve the efficiency and effectiveness of its contract management processes.	**Manage DOE Capital Asset Projects:** Complete 90% of the construction projects at the original scope and within 10% of cost baseline established at Critical Decision (CD)-2, approve performance baseline.	Under Secretary for Management and Performance Director, Office of Project Management Oversight and Assessments
2. Security: Ensure the security of national assets entrusted to DOE and classified information related to nuclear weapons while striving to enhance the Department's productivity to achieve mission objectives.	Goal: Implement an insider threat program to detect, deter, and mitigate insider threat actions by federal and contractor employees. FY 2017 Performance Measures: • Completion of the Local Insider Threat Technical Standard. • Administration of FY 2017 Insider Threat Training for Cleared Personnel. • Conduct of quarterly Site Assistance Visits to assist Local Insider Threat Working Groups in the establishment and administration of their programs. FY 2018 Performance Measures: • Development of Departmental Insider Threat Program Training/Communication/Awareness/Education	Deputy Associate Under Secretary for Security

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
	material for DOE general population and other groups such as practitioners and supervisors. • Conduct of quarterly Site Assistance Visits to assist Local Insider Threat Working Groups in the establishment and administration of their programs. Goal: Improve electrical grid resiliency and security through partnerships with the Power Marketing Administrations, the North American Electric Reliability Corporation, and the Department of Defense's Counter-terrorism Technology. FY 2018 Performance Measures: • Completion and validation of the Power SURGE (Security Upgrades for Reliable Grid Enhancements) Asset Protection matrix and publication of Power SURGE Technology Transfer Manual. • Adoption and use of new electric grid risk assessment methodology by Power Marketing Administrations. • Recognition by the North American Electric Reliability Corporation that the new DOE risk assessment is acceptable to use to meet their standards. • Completion and implementation of TINCAP (Transmission Incident Notification system for Critical Asset Protection) as a means to provide real-time situational awareness of coordinated attacks on the grid. Goal: Support cost effective implementation of the Department's Design Basis Threat Order to address credible and emerging threats to personnel, assets, facilities and missions. FY 2017 and FY 2018 Performance Measures: • Site assistance visits provided within 30 days of field request • Waivers and exemptions processed within 60 days of program office request	

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
	Goal: Update information classification policy and guidance to stay abreast of emerging programs, technologies and threats in order to protect national security interests. FY 2017 and FY 2018 Performance Measures: • Manage information declassification actions to ensure coordination within 90 days of Technical Evaluation Panel recommendations. • Examine Unclassified Controlled Nuclear Information scope for expanded use in weapons information. • Update at least ten guides and bulletins. FY 2018 Performance Measure: • Develop a policy guidance bulletin for procurement activities.	
3. Environmental Cleanup: EM's mission is to clean up the environmental legacy of nuclear weapons production and nuclear energy research. Fifty years of conducting these activities produced unique, technically complex problems.	Performance Goal: Safely clean up the environmental legacy brought about by five decades of nuclear weapons development and government-sponsored nuclear energy research. <u>FY 2017 milestones:</u> • Restart waste emplacement at the Waste Isolation Pilot Plant by the end of Q1 FY 2017 • Complete demolition to achieve slab on grade of the Plutonium Finishing Plant at Richland by the end of FY 2017 <u>FY 2018 milestones:</u> • Begin operations at the Salt Waste Processing Facility to process the liquid tank waste stored at the Savannah River Site. • Begin construction on the Outfall Mercury Treatment Facility, which will capture and treat mercury contamination at the Oak Ridge Site. • Begin construction on the Safety and Significant Confinement Ventilation System and Exhaust Shaft capital projects at the Waste Isolation Pilot Plant in Carlsbad, New Mexico to support continued complex-wide transuranic waste disposal operations.	Assistant Secretary for Environmental Management

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
	Note: In addition to the above milestones, cleanup progress is measured by the EM corporate performance measures reported in the annual performance plan/report and the annual budget request to Congress.	
4. Spent Nuclear Fuel and High-Level Waste Disposal: DOE is directed by the amended Nuclear Waste Policy Act of 1982 (NWPA) to manage and dispose of high-level waste and spent nuclear fuel in a manner that protects public health, safety, and the environment	FY 2018 Performance Measure: Complete 90% of annual program milestones to restart licensing activities for the Yucca Mountain nuclear waste repository and initiate a robust interim storage program.	Assistant Secretary for Nuclear Energy
5. Cybersecurity: Today's rapidly evolving cyber landscape presents unprecedented opportunities and challenges. Achieving a safe, secure, and resilient cyber environment demands that we adopt innovative approaches and a full range of best practices. Cyber is an enterprise-wide responsibility that demands an expanded view—beyond traditional cybersecurity—to encompass the broad scope of information sharing and information safeguarding.	**Information Security Continuous Monitoring** <u>Hardware Asset Management:</u> • Performance must be greater than or equal to 95% for both Hardware Asset Management measures (asset detection, asset meta data collection): <u>Software Asset Management:</u> • Performance must be greater than or equal to 95% for both Software Asset Management measures (software inventory, software whitelisting). <u>Vulnerability Management:</u> • Performance must be greater than or equal to 95% for Vulnerability Management <u>Secure Configuration Management:</u> • Performance must be greater than or equal to 95% for Secure Configuration Management **Identity, Credential, and Access Management:** <u>Multi-factor Authentication (MFA):</u> • Level of Assurance 4 for Unprivileged Network Accounts performance must be equal to 100%. FY 2017 Target: 85% FY 2018 Target: 90%	Chief Information Officer

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
	• Level of Assurance 4 for Privileged Network Accounts performance must be equal to 100%. FY 2017 Target: 100%, FY 2018 Target: 100% • Implement federated identity management infrastructure linking identity sources across DOE to OneID. FY 2017 Target: 75% FY 2018 Target: 95% • Implement standards based federated access management infrastructure across DOE to enable single sign-on: FY 2017 Target: 50% FY 2018 Target: 95% • Integrate high priority, enablement-ready applications into the federated access management framework: FY 2017 Target: 10% FY 2018 Target: 30% **Anti-Phishing and Malware Defense (APMD):** <u>Anti-Phishing</u> • Performance on Anti-Phishing measurements must be greater than or equal to 90% on at least 5 of 7 capabilities <u>Malware Defense</u> • Performance on Malware Defense measurements must be greater than or equal to 90% on at least 3 of 5 capabilities <u>Other Defenses (capabilities related to Anti-Phishing & Malware)</u> Performance on these measurements must be greater than or equal to 90% on at least 2 of 4 capabilities	
6. Human Capital Management: The Department requires a fully engaged and high-	• Annual Reductions in Average time to hire. FY 2016 Target: 80 calendar days. Result: 106.5 days	Chief Human Capital Officer

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
performing federal workforce to achieve the strategic goals and objectives of the 2014-2018 DOE Strategic Plan. Key challenges to DOE's federal workforce in the current human capital environment include: • Addressing the recent steady decreases in the size of the workforce while the gap between the workforce size and FTE allocation has increased; • Mitigating the risk to mission from employee attrition, as a result of the increased number of resignations from federal service, while the risk of losses from increased retirement eligibility continues to increase; • Mitigating succession risks, as evidenced by the growing underrepresentation of new generations in the workforce while overall succession readiness remains unclear; • Strengthening employee engagement, as indicated by measures of employee engagement and employee perceptions of agency leadership; and • Implementing a new human resources (HR) Service Delivery model to reduce costs and increase efficiency of HR services	FY 2017 Target: 80 calendar days. FY 2018 Target: 80 calendar days. • Implement a framework for performance-based culture - Percent of SES with compliant plans. FY 2016 Target: >= 90% Result: 92.1% FY 2017 Target: >= 90% FY 2018 Target: >= 90%	

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
compared to Government benchmarks		
7. Safety Culture Maintain the safety and health of the Department's current workforce and ensure the safety of the general public from departmental operations while striving to enhance the Department's productivity to achieve mission objectives.	Goal: Assist program offices in continuing DOE's excellent safety performance at levels exceeding industry performance. FY 2017 and FY 2018 Performance Measure: • DOE occupational illness and injury incidence rates and days away from work due to illness and injury cases less than industry. Goal: Improve DOE's safety culture by establishing a safety culture community of interest to share best practices, performing safety culture self-assessments, and implementing methods to monitor safety culture performance. FY 2017 and FY 2018 Performance Measures: • The number of lessons learned/best practices shared • The number of lessons/practices adopted by sites. • The number of self-assessments conducted • The number of sites actively measuring safety culture performance. Goal: Develop, pilot and deliver safety culture courses for DOE for each of the following three audiences: senior managers, front line managers, and employees. FY 2017 and FY 2018 Performance Measures • The number of individuals in each category trained per year.	Deputy Associate Under Secretary for Environment, Health and Safety
8. Infrastructure DOE is responsible for a vast portfolio of world-leading scientific and production assets as well as the general purpose infrastructure that enables the Department to operate and use those assets. While the Department has made significant investments in its	• Decrease percentage of unassessed DOE Buildings, OSFs and Trailers (excluding FERC, LM, NR and PMAs). FY 2017 target: Decrease of 5% below the FY 2016 baseline of 12.38% of buildings unassessed FY 2018 target: Decrease of 5% below the FY 2017 percentage of unassessed buildings.	Director, Office of Management

Management Priority	Related Performance Goals/Indicators/Milestones	Responsible Official(s)
world class mission facilities, much of the supporting infrastructure (e.g. office space, general laboratory spaces, maintenance shops, utilities, etc.) that enables the mission and forms the backbone of the laboratory and production plant sites is aging and is beyond its design life and is in need of greater attention. Based on Department-wide facility assessments and data analyses, the Department is facing a systemic challenge of degrading infrastructure and levels of deferred maintenance that have been increasing. In addition to a degrading infrastructure, excess contaminated facilities are a drain on the Department of Energy's infrastructure resources, and can pose a risk to safety, security, and programmatic objectives. The Department faces a significant challenge with the number of aging excess facilities throughout the complex and the limited resources to deactivate, decontaminate, decommission, and demolish those facilities in the near term.		

Program Performance Goals and Targets

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 FY 2012 through FY 2018 and results through FY 2016.

Performance targets for FY 2016 were revised from the FY 2016 Congressional Budget Request to reflect changes due to enacted appropriations. The Consolidated Appropriations Act was not available when the Department of Energy developed the FY 2018 Congressional Budget. Therefore, FY 2017 performance targets reflect the P.L. 114-254 continuing resolution level annualized to a full year. FY 2018 performance targets reflect the FY 2018 Budget Request level.

National Nuclear Security Administration
Federal Salaries & Expenses

NNSA Federal Salaries & Expenses

Program	NNSA Federal Salaries & Expenses						
Performance Goal (Measure)	**Federal Administrative Costs** - Maintain the Office of the Administrator Federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	5.9 %	5.9 %	5.9 %	5.9 %	5.9 %	5.9 %	5.9 %
Result	**Exceeded** - 4.1	**Exceeded** - 4.2	**Exceeded** - 4.1	**Met** - 3.9	**Met** - 3.7	TBD	TBD
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 2016 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 2016 results are 3.7 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

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	2012	2013	2014	2015	2016	2017	2018
Target	100 % of stockpile certified	100 % of stockpile certified	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	TBD	TBD
Endpoint Target	Annually, maintain 100% of warheads in the stockpile as safe, secure, reliable, and available to the President for deployment.						
Commentary on 2016 Results (Action Plan if Not Met)	NNSA achieved the annual target whereby the nuclear weapons in the active stockpile have been assessed as safe, secure, and reliable through the Annual Assessment process. To close out the fiscal year, the three weapon laboratories (LANL, LLNL, and SNL) have published the seven Cycle 21 Annual Assessment Reports (AARs) (one per weapon system) and the Laboratory Directors have issued their 2016 Annual Assessment Letters to the Secretary of Energy and the Secretary of Defense. NNSA has also begun reviewing, analyzing, and summarizing the Cycle 21 data and has begun drafting a briefing for the Secretary of Energy (scheduled to be presented in Quarter 1 of FY 2017). This result is important because it ensures the overall availability of the nuclear weapons stockpile for the nation's defense.						
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 21 Execution Plan						

Program	Directed Stockpile Work						
Performance Goal (Measure)	**Retired Weapons Systems Dismantlement** - Complete the dismantlement of all weapon systems in excess to stockpile requirements per approved annual schedule published in the Planning and Program Directive (P&PD), Program Control Document (PCD), and the Requirements and Planning Document (RPD) "annual" documentation with a goal of balancing dismantlement work by mitigating gaps in future stockpile reductions.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	100 % of annual planned dismantlements	100 % of annual planned dismantlements	100 % of annual planned dismantlements	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	**Exceeded** - 102	TBD	TBD
Endpoint Target	Complete by FY 2021 the dismantlement of the quantity of weapons in retired status at the end of FY 2008.						
Commentary on 2016 Results (Action Plan if Not Met)	NNSA completed the FY 2016 dismantlements ahead of schedule and exceeded the planned quantity. NNSA completed the CSA B83 baseline dismantlement deliverables four months ahead of schedule and under budget. NNSA also completed all W80-1 weapons dismantlement on schedule. Recovery plans for lost scope in FY 2015 resulting from weather delays, safety reviews, and facility related delays, remains in effect to meet the FY 2021						

	commitment. NNSA remains on track for full recovery of the FY 2015 scope by FY 2017. The agency remains on track with its plans to increase dismantlement activities.
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			100 % of scheduled unit builds	100 % of scheduled unit builds	100 % of scheduled unit builds	100 % of scheduled unit builds	100 % of scheduled unit builds
Result			**Met** - 100	**Not Met** - 85	**Met** - 100	TBD	TBD
Endpoint Target	Complete production of the NWC-approved W76-1 LEP production schedule by FY 2019.						
Commentary on 2016 Results (Action Plan if Not Met)	NNSA exceeded the FY 2016 planned 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 met the W76-1 warhead production and delivery directive schedule requirements within site budget allotment and in accordance with directive documents. NNSA successfully recovered all FY 2015 warhead production shortfalls by the end of first quarter, FY 2016. In addition, Pantex has met the warhead delivery requirements according to the negotiated delivery schedule for the fourth quarter and at the end of FY 2016. NNSA continues to deliver W76-1 warheads to the Navy on schedule. 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.						
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; and, 5) Life Extension Program Management Plan dated 01-24-03, and 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	1,872 TPBARs	1,872 TPBARs	2,416 TPBARs	3,120 TPBARs	3,120 TPBARs	3,824 TPBARs	4,928 TPBARs
Result	**Met** - 1,872	**Met** - 1,872	**Met** - 2,416	**Met** - 3,120	**Met** - 3,120	TBD	TBD
Endpoint Target	By the end of FY 2020, complete irradiation of 5,104 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 2013, the irradiation cycle started in October of 2012. Thus, there is no increase to the number of TPBARs irradiated in FY 2013 and, for the same reason, no increase in FY 2016 or FY 2019.						
Commentary on 2016 Results (Action Plan if Not Met)	This measure was is track. The annual tritium program metric is based on the quantity of Tritium Producing Burnable Absorber Rods (TPBARs) that have completed irradiation, rather than what is placed in the reactor. For the program, the irradiation cycle is 18 months, which crosses fiscal years. With this definition of the metric, the FY 2016 irradiated TPBAR quantities did not change from FY 2015 to FY 2016, and remains 3,120 TPBARs. It should be noted that 704 TPBARs completed irradiation at the end of FY 2015, and another 704 TPBARs started irradiation in October 2015. These 704 TPBARS will complete irradiation in March 2017, and will be reflected in the FY 2017 metric. 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

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	68 % of progress	72 % of progress	76 % of progress	80 % of progress	84 % of progress	N/A	N/A
Result	**Met** - 68	**Met** - 72	**Met** - 76	**Met** - 80	**Met** - 84	N/A	N/A
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 Internal Confinement Fusion (ICF) Campaign.						
Commentary on 2016 Results (Action Plan if Not Met)	The measure reached the annual, cumulative target of 84% progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models developed by validation with experiment. Accomplishments derived from the Performance Capability Framework (PCF) include the following achievements. The Science Campaign carried out hydrotests to assess LEP options. It completed follow-up to the Pit Reuse milestone. The Science Campaign developed approaches to improve utilization of above ground experiments to enhance confidence for future assessment and certification. It completed material experiments and analyses to support a safety pegpost. Several boost experiments were completed as well as a strategic plan for boost. High Z opacity experiments were completed which measure opacity uncertainty and target properties. The conceptual design has been completed for the next subcritical experiment and for the National Hydrotest Plan. Plutonium (Pu) aging experiments and modeling delivered Pu data to support the B61 Life Extension Program (LEP) and Advanced Simulation and Computing (ASC) modeling. Initiated the design, development and early assembly of an advanced pulsed power accelerator began. This result is important because it will improve nuclear weapon certification confidence. Note: NNSA replaced the Experimentally Validated Physics Models performance measure with the Science-Based Capabilities performance measure to reflect the refocusing of the Science program away from tuning weapon performance codes to providing the scientific capabilities needed to assess and certify the stockpile and to enable LEPs.						
Documentation, Limitations, Methodology, Validation, and Verification	Predictive Capability Framework, Milestone Reporting Tool, White Paper on Quantification of Margins and Uncertainty Performance Measure						

Program	Science						
Performance Goal (Measure)	**Science-Based Capabilities** - Provide the science-based capabilities necessary to support stockpile certification on an annual basis.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						100 % of progress	100 % of progress
Result						TBD	TBD
Endpoint Target	Each year provide the science-based capabilities (e.g., experimental infrastructure, assessment and certification methodologies, experiments, data, and analyses) to enable the annual assessment and certification of the stockpile including certification of LEPs and weapon modifications. Note: NNSA replaced the Experimentally Validated Physics Models performance measure with the Science-Based Capabilities performance measure to reflect the refocusing of the Science program away from tuning weapon performance codes to providing the scientific capabilities needed to assess and certify the stockpile and to enable LEPs.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Stockpile Stewardship Management Plan, Chapter 3						

Engineering

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	21 deliverables	21 deliverables	20 deliverables	22 deliverables	17 deliverables	13 deliverables	14 deliverables
Result	**Met** - 21	**Met** - 21	**Met** - 20	**Met** - 22	**Met** - 17	TBD	TBD
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 on nuclear weapons refurbishment and assessment activities.						
Commentary on 2016 Results (Action Plan if Not Met)	NNSA met its FY 2016 annual target. These accomplishments include: completed State Initiation Generator (STINGER) control subassemblies and tested them to demonstrate functionality; Delivered Highest Priority Mechanical Component Development significant technical findings, enabling promising design changes to increase manufacturing						

	yield; Full system compatibility testing hardware certified and shipped to Device Assembly Facility (DAF) in Nevada; and Completed initial Air Force Integrated Surety Architecture (ISA) design. 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

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				10 % of progress (cumulative)	20 % of progress (cumulative)	30 % of progress (cumulative)	40 % of progress (cumulative)
Result				**Met** - 10	**Met** - 20	TBD	TBD
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 2016 Results (Action Plan if Not Met)	The performance measure reached its target of 20% in quarter four of FY 2016. FY 2016 accomplishments include both the National Ignition Facility (NIF) and the Z facilities have reached milestone levels of successful utilization, NIF completed 400 targets shots, its goal for FY 2016 and more than double the number of shots in FY 2014, and Z facility completed its 3,000th shots since the beginning operations in September 1996. Recent Z-shots have demonstrated record warm x-ray and neutron outputs. SNL executed its 19th and 20th Plutonium Equation of State (EOS) experiments. A LANL/LLNL team executed a mini-campaign of three High Energy Density (HED) opacity experiments on the NIF to improve hohlraum designs and to measure temperature, density and uniformity of the sample inside a						

	new type of hohlraum. 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 and Research and Development Program (Science) 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 performance goal measure indicated above, and are further supported through the milestones documented in the ICF and Science Program Implementation Plans.

Advanced Simulation and Computing

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	40 % cumulative reduction in the 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"	53 % cumulative reduction in the use of calibration "knobs"	60 % cumulative reduction in the use of calibration "knobs"	63 % cumulative reduction in the use of calibration "knobs"
Result	**Not Met** - 38	**Not Met** - 41	**Met** - 44	**Met** - 46	**Met** - 53	TBD	TBD
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, with support from the next-generation computational technologies resulted from NNSA's investments in the Exascale Computing Initiative, 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 2016 Results (Action Plan if Not Met)	Achieved 100% of the FY 2016 annual target of 53% cumulative percentage reduction in the use of calibration “knobs” to successfully simulate nuclear weapons performance. Fourth quarter accomplishments: Level two milestones (sourced in the ASC FY 2016 Implementation Plan, Version 1, pages 15-18), used to evaluate and track progress, were completed by the end of FY 2016. 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

Advanced Manufacturing Development

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target		5 deliverables	5 deliverables	6 deliverables	5 deliverables	6 deliverables	5 deliverables
Result		**Exceeded** - 6	**Met** - 5	**Met** - 6	**Met** - 5	TBD	TBD
Endpoint Target	Until the last nuclear weapon system in the stockpile is dismantled, NNSA will continue to mature production technologies and manufacturing capabilities to support Directed Stockpile Work, nuclear weapons refurbishment, and assessment activities.						
Commentary on 2016 Results (Action Plan if Not Met)	NNSA met its FY 2016 annual target and all deliverables were on schedule and on budget. FY 2016 accomplishments include: Issued a report on direct ink write (DIW) multi-material capabilities; Completed the Heterojunction Bipolar Transistor (HBT) Discrete and Integrated Circuit Processing configuration control documentation to meet production and surveillance requirements; Completed Joint Radar Modular process capability improvements, which included a report about production issues and potential mitigation strategies to improve the modules manufacturability; and analyzed the viability of Additively Manufacturing prototype samples with recycled metal powders. These results are important because they ensure the development of new manufacturing processes required to support the safety, security, reliability, and performance of the current and enduring US nuclear 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

Program	Infrastructure and Operations						
Performance Goal (Measure)	**Construction Projects (formerly Major Construction Projects)** - Execute construction projects within approved costs and schedules, as measured by the total percentage of projects with total estimated cost (TEC) greater than $20 million with a schedule performance index (ratio of budgeted cost of work performed to budgeted cost of work scheduled) and a cost performance index (ratio of budgeted cost of work performed to actual cost of work performed) between 0.9-1.15.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	90 % of projects	90 % of projects	90 % of projects	90 % of projects	90 % of projects	90 % of projects	90 % of projects
Result	**Met** - 90	**Met** - 90	**Met** - 90	**Met** - 90	**Not Met** - 60	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Two of the five baselined projects performance indices will be below 0.9 for the remainder of this FY. The 4th Q Cost Performance Index (CPI) for the TA-55 Reinvestment Project (TRP) II Phase C at LANL is 0.84 and the project will exceed its performance baseline cost. As a result, the program office with assistance from the Office Corporate Budget for Weapons Activities, NA-MB-51, has taken steps to provide additional funds to complete the project. In addition, the project team has prepared a detailed plan to complete the project within the baseline schedule. In the 4th Q, the TRP II Phase C Schedule Performance Index improved and is now 0.9 which is within the target. The 4th Q SPI for the Radioactive Liquid Waste Treatment Facility Upgrade-Low Level liquid Waste (LLW) Treatment Facility Subproject, at LANL, is 0.72. The estimated actual cost (EAC) forecast is currently $900K above the total project cost (TPC), and it is likely that it will grow based on current performance of the M&O and their construction subcontractor. The LLW subproject is executed through a firm-fixed price contract through the M&O. The subcontractors are responsible for completing the construction within the contract schedule and cost. The M&O contractor is responsible for managing the project to ensure the project management within the baseline. The M&O project costs are the major contributor to the increase in the EAC. The project team is collecting information and performing independent cost and schedule estimates to understand what improvements are needed to improve the project schedule and complete it within the performance baseline schedule. **Action Plan:** The RLWTF-LLW Project is assessed red due to a potential breach of the Performance Baseline. The project has experienced schedule slip and cost increases in LANS self-perform work, construction support costs, and subcontracted work. The earned value estimate at completion reflects a final project cost below total project cost (TPC). NA-APM commissioned a cost team, independent of the project, to review the estimate to complete and determine if the project can be completed within the TPC.						
Documentation, Limitations, Methodology, Validation, and Verification	Baselined schedules and major decision points for projects are in individual project plans; Monthly project progress reports include Earned Value Management (EVM) data and DOE Project Assessment and Reporting System (PARS) reports						

Program	Infrastructure and Operations						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	95 % of deliverables	95 % of deliverables	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	TBD	TBD
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.						
Commentary on 2016 Results (Action Plan if Not Met)	Exceeded the annual 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						

Program	Infrastructure and Operations						
Performance Goal (Measure)	**Maintenance** - Percentage of preventative maintenance (PM) spending vs total maintenance (TM)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target					40 % PM conducted	35 % PM conducted	36 % PM conducted
Result					**Not Met** - 34	TBD	TBD
Endpoint Target	PM to TM target is 50%						
Commentary on 2016 Results (Action Plan if Not Met)	This is an important measure of the trend of PM, thus spending more on preventive maintenance to keep facilities in working order. The year end results reflect the general tendency of breakdowns and weather events occurring more often during the fourth quarter (as well extraordinary events) which cause resources to be redirected for conduct of corrective maintenance activities, and that facilities are still requiring significant corrective maintenance activities. Until recapitalization investments, in concert with investments in maintenance, are able to reach the majority of obsolete systems and revitalize facilities across the complex, significant corrective maintenance is still required. Therefore marked improvements at the facility or maintenance performance measure levels have not yet been realized (as						

	corroborated by the recapitalization performance goal). This is a new measure with FY 2016 being the first year of use. FY 2016 year-end actual results set the performance benchmark against which progress will be measured in the future. **Action Plan:** Year end results reflect that facilities are still requiring significant corrective maintenance activities, and that the state of the infrastructure is still in corrective mode. Therefore, it is likely that spending on preventive maintenance will not meet the target for another year or more, as it will require multiyear investments, in conjunction with recapitalization, to change the course of maintenance activities.
Documentation, Limitations, Methodology, Validation, and Verification	Monthly costs reported in NNSA Program Management Information System, Generation 2 (G2)

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			95 % availability	85 % availability	85 % of availability	85 % of availability	85 % of availability
Result			**Exceeded** - 98	**Exceeded**-98.6	**Exceeded** - 98	TBD	TBD
Endpoint Target	Mission critical and mission dependent facilities are available at least 85% of scheduled days annually.						
Commentary on 2016 Results (Action Plan if Not Met)	Exceeded the annual target of 85% by achieving facility availability of 98% of scheduled days available for operations in FY 2016. 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 Reported, by site						

Program	Infrastructure and Operations						
Performance Goal (Measure)	**Recapitalization** - Percentage of NNSA assets rated as adequate (by Replacement Plant Value)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target					39 % of projects	37 % of projects	37.5 % of projects
Result					**Not Met** - 37	TBD	TBD
Endpoint Target	44% of NNSA assets rated as adequate						
Commentary on 2016 Results (Action Plan if Not Met)	Largely achieved the annual target of 39% of NNSA assets rated adequate by achieving 37% for 2016. The annual target was missed because changing the condition of old and brittle facilities requires significant investments. Until recapitalization investments, in concert with investments in maintenance, are able to revitalize a majority of the large inventory of obsolete systems and facilities across the complex, improved ratings of facilities will not be realized. Annually, there are separate investments across the enterprise addressing deficiencies in a facility, therefore, it will take multiple investments to impact the rating of a facility's condition. In addition, although there may be investments in a facility over time to improve its rating, it will not be reflected in FIMS until it is assessed which is only required every five years. The recapitalization measure is important for conveying the condition of facilities and impact of focused recapitalization investments. This is a new measure with FY 2016 being the first year of use. FY 2016 year-end actual results set the performance benchmark for which progress will be measured in the future. **Action Plan:** In order to change the condition of a facility, significant investments are needed. Because annual investments address individual deficiencies in facilities, it will take multiple investments to impact the condition rating of facilities to meet performance measure targets. Therefore, NNSA is evaluating the outcome of the FY 2016 metric to identify more suitable targets that measure the facility condition rating process, and the annual budget approach to the recapitalization investments.						
Documentation, Limitations, Methodology, Validation, and Verification	FIMS query						

Secure Transportation Asset

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	100 % of shipments	100 % of shipments	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	TBD	TBD

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 2016 Results (Action Plan if Not Met)	STA fully met the Annual Target of 100% Safe and Secure Shipments. Accomplishments include: an on-time annual delivery rate of 98.7%, 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 is 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.

Defense Nuclear Security

Program	Defense Nuclear Security						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			90 % index	90 % index	90 % index	90 % index	95 % index
Result			**Met** - 90	**Met** - 90	**Met** - 90	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Fully achieved the annual target of 90%, implementing and sustaining a repeatable process for conducting site vulnerability and security 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 2016. The Enterprise Vulnerability Assessment Project has been changed to the Enterprise Risk Management Project plan to better align with vulnerability assessments and risk assessments. A program plan for this process has been prepared, resources have been identified, and initial assessments and program reviews have been completed at all NNSA sites. These results are important because they ensure consistent protection strategies across the Enterprise which are understandable and defensible. The NNSA Risk Management Supplemental Directive (SD) and Field Manual (FM) have been developed and are in draft review. A working group was conducted in July 2016 with all NNSA federal and contractor personnel in attendance to provide input and feedback for the SD and FM. A senior leadership briefing was held in September 2016 to move the program to its final review process. The remaining 10% of this project will be accomplished when the E-RM						

	Supplemental Directive and Field Manual are signed by the NNSA Administrator which is tentatively scheduled for the first part of FY 2017.
Documentation, Limitations, Methodology, Validation, and Verification	Enterprise Risk Management Project Plan and ERM Index

Program	Defense Nuclear Security						
Performance Goal (Measure)	**Physical Security Infrastructure Recapitalization (PSIR)** - Implement and maintain a physical security life cycle management process, including on-time and to-standard supplemental deliverables after implementation.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			85 % index	85 % index	90 % index	90 % index	95 % index
Result			**Exceeded** - 100	**Met** - 85	**Met** - 90	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Achieved the annual target of 90% 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 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 the Y-12, LANL, LLNL, Pantex, KC, NNSS, SNL, Savannah River Site, and the Albuquerque Complex.						
Documentation, Limitations, Methodology, Validation, and Verification	Physical Security Supplemental Project Plan, Site Visit Reports, Physical Security Supplemental quarterly and annual reports						

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	2012	2013	2014	2015	2016	2017	2018
Target			90 % index	90 % index	90 % index	90 % index	95 % index
Result			**Exceeded** - 100	**Met** - 90	**Met** - 90	TBD	TBD
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 2016 Results (Action Plan if Not Met)	The Enterprise Mission Essential Task List (EMETL)-based training program for protective forces at all eight NNSA sites has achieved 100% of the 90% annual target for implementation. All sites have implemented the EMETL-based training program and have developed procedures for sustaining the program. DNS released version 5.0 of the EMETL Field Manual (FM) on 1 June 2016. Quarterly performance assessment reports are submitted by each site and 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. These ongoing activities provide assurance that the implemented program is being sustained in an effective manner.							
Documentation, Limitations, Methodology, Validation, and Verification	EMETL Project Plan, Site Assistant Visit Reports, EMETL Implementation quarterly and annual reports						

NNSA IT and Cybersecurity

Program	NNSA IT and Cybersecurity						
Performance Goal (Measure)	**Cybersecurity Assessment Reviews** - Annual Percentage of cybersecurity Site Assessment Reviews conducted by the Office of Enterprise Assessments that resulted in the rating of "effective."						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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	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	**Not Met** - 50	TBD	TBD
Endpoint Target	Annually, achieve at least an "effective" rating of 100% of NNSA OCIO Site Assistance Visit (SAV) Cybersecurity reviews.						
Commentary on 2016 Results (Action Plan if Not Met)	Did not achieve the annual target of annual percentage of Cybersecurity and IT Program Site Assessment Reviews conducted by the Office of Enterprise Assessments (EA) (formerly the Office of Health, Safety and Security) that						

	resulted in the rating of "effective. The annual target was missed because 1 of 2 Site Assessment Reviews conducted by EA this FY resulted in deficiencies reported that are adversely affecting the operational status of information systems/networks. Since this target was missed, NA-IM remains concerned with the overall status of Consolidated Nuclear Security's (CNS's) performance to fully resolve deficiencies noted in the EA assessment report. The EA site assessment report recognized that CNS has implemented several improvements across their programmatic and technical controls; however, the site assessment report also noted issues that continue to be persistent challenges for CNS to resolve that led to the degradation of the overall state of their program since 2014. These issues are still compounding weaknesses in program planning, implementation, or monitoring adversely affecting the operational status of information systems/networks and impeding the integration under NNSA Production Office (NPO). This result is important because these reviews provide the NNSA OCIO with evidence of the overall health and status of each site's Cyber Security Program, identify issues in the Cyber Security Program that may require corporate actions, and identify OCIO focus areas to improve the Cyber Security Program. **Action Plan:** Steps that are going to be taken: CNS established formal corrective actions plan that should fully resolve deficiencies from EA assessment report and facilitate their ability to return and maintain the state of the overall program to the level of performance required. Progress will be measured by results of official tests and evaluations of programmatic and technical controls, FISMA POA&M Reporting, and Performance Evaluation Measurement Process (PEMP).
Documentation, Limitations, Methodology, Validation, and Verification	EA Final Assessment Reports

Defense Nuclear Nonproliferation

Material Management and Minimization

Program	Material Management and Minimization						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	81 reactors	88 facilities	92 facilities	94 facilities	98 facilities	101 facilities	104 facilities
Result	**Exceeded** - 82	**Met** - 88	**Met** - 92	**Met** - 94	**Not Met** - 97	TBD	TBD
Endpoint Target	By 2035, convert or verify the shutdown prior to conversion of approximately 156 HEU reactors and isotope production facilities.						

Commentary on 2016 Results (Action Plan if Not Met)	Largely achieved the annual target of converting or verifying the shutdown of 4 HEU reactors and isotope production facilities. At the end of September, 3 HEU reactors and isotope production facilities were converted or verified the shutdown for a cumulative target of 97. The annual target was missed because one conversion, Ghana's Miniature Neutron Source Reactor, was not completed due to delays in Chinese Government approval of air shipment of the replacement LEU fuel from China to Ghana. Since this target was missed, the threat of a terrorist acquiring HEU for use in an improvised nuclear device will increase. This result is important because this effort will minimize the amount of weapons-usable material around the world. **Action Plan:** NNSA is working closely with the Chinese Government, Ghana, and the IAEA to remove the remaining obstacles to complete the conversion. Progress will be measured by getting approval from the Chinese government to ship the LEU, and then convert the reactor in Ghana.
Documentation, Limitations, Methodology, Validation, and Verification	Confirmations from facilities and/or governments, via formal letters or emails that either a facility has been shut down and no longer will use HEU to operate, or has converted from HEU to LEU; international statements by countries confirming conversion; site visits by Material Management and Minimization federal/laboratory staff providing visual confirmation of conversion.

Program	Material Management and Minimization						
Performance Goal (Measure)	**Nuclear Material Removed** - Cumulative number of kilograms of vulnerable nuclear material (HEU and plutonium) removed or disposed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	3,555 kg	3,835 kg	5,207 kg	5,332 kilograms	6,055 kilograms	6,285 kilograms	6,499 kilograms
Result	**Not Met** - 3,462	**Exceeded** - 5,017	**Met** - 5,207	**Exceeded** - 5,376	**Exceeded** - 6,104	TBD	TBD
Endpoint Target	By 2027, remove or dispose of 7,680 kilograms of vulnerable nuclear material (HEU and plutonium), enough for approximately 300 nuclear bombs.						
Commentary on 2016 Results (Action Plan if Not Met)	Exceeded the annual target of removing or disposing of 678 kg of vulnerable nuclear material (HEU and plutonium). At the end of September, 728 kg were removed or disposed by accomplishing fifteen successful shipments and three down-blending campaigns for a cumulative amount of 6,104 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	Canadian Nuclear Laboratories (CNL) Bill of Lading, dated 6 July 2016; CNL Bill of Lading, dated 26 July 2016; CNL Bill of Lading, dated 13 August 2016; CNL Bill of Lading, dated 29 August 2016; CNL Bill of Lading, dated 11 September 2016. PT Industri Nuklir Indonesia log book documenting the downblending of irradiated solution bottles, begun on 29 June 2016 and completed on August 22, 2016.						

	Dangerous Goods Declaration for United Kingdom shipment, dated 10 September 2016. Volga-Dnepr Airlines Waybill (Poland Removal), dated 26 September 2016.

Program	Material Management and Minimization						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	139 MT	143 MT	146 MT	150 MT	153 MT	157 MT	160 MT
Result	**Exceeded** - 141.1	**Exceeded** - 143.8	**Exceeded** - 146.3	**Met** - 150	**Met** - 154.3	TBD	TBD
Endpoint Target	By the end of FY 2019, complete down-blending of 162 MT of 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 and disposition paths for weapons containing HEU.						
Commentary on 2016 Results (Action Plan if Not Met)	Exceeded the annual target of down-blending or shipping 3 MT of surplus HEU. At the end of September, 4.3 MT was down-blended or shipped for a cumulative total of 154.3 MT of HEU. 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						

Program	Material Management and Minimization						
Performance Goal (Measure)	**U.S. Plutonium Disposition (H-Canyon)** - Cumulative kilograms of plutonium converted to oxide at Savannah River H-Canyon.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			180 kg	100 kg	100 kg	N/A	N/A
Result			**Not Met** - 1	**Not Met** - 1.8	**Not Met** - 7.62	N/A	N/A
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 2016 Results (Action Plan if Not Met)	Did not achieve the annual target of converting 100 kg of plutonium to oxide. At the end of September, 5.82 kg of plutonium was converted to oxide for a cumulative total of 7.62 kg. The annual target was missed because HB-Line operations were paused following an August 2015 violation relative to criticality safety controls and procedural violations. Since the target was missed, the overall operations schedule to complete the H-Canyon plutonium oxide conversion mission will extend. Additionally, Savannah River Nuclear Solutions (SRNS) notified NNSA that that outyear plutonium oxide annual production targets cannot be achieved utilizing HB-Line aqueous processing. HB-Line resumed operations in February 2016 and has produced ~20 kg of plutonium as oxide to date. The oxide has consistently met isotopic, chemical and impurity specifications for use as Mixed Oxide Fuel Fabrication Facility (MOX) feedstock. However, some oxide product is high in moisture content, which can be addressed at time of 3013 packaging (if material is packaged for MOX). This result is important because it demonstrates the commitment towards the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapon-grade plutonium. Note: FY 2017 measures will eliminate the site identification and be covered under the US Surplus Plutonium Disposition Performance Measure. **Action Plan:** SRNS took a comprehensive approach to addressing the August 2015 incident through methodical action steps with senior management direct oversight, and successfully met their schedule resuming oxide production operations in February. The SRNS executive team has explored alternative approaches to HB-Line aqueous polishing supportive of SRS NNSA and Office of Environmental Management missions; the recommendations are currently under NNSA consideration.
Documentation, Limitations, Methodology, Validation, and Verification	Contractor letter to NNSA reporting cumulative quantity of plutonium oxide produced in compliance with MOX specifications and supporting documentation for material produced, analyzed and packaged during FY 2016.

Program	Material Management and Minimization						
Performance Goal (Measure)	**U.S. Plutonium Disposition (LANL)** - Cumulative kilograms of plutonium metal converted to oxide at Los Alamos National Laboratory.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	375 kg	592 kg	692 kg	792 kg	667 kg	N/A	N/A
Result	**Exceeded** - 442	**Met** - 592	**Not Met** - 617	**Not Met** - 667	**Met** - 667	N/A	N/A
Endpoint Target	By 2029, complete operations for 2 MT (2,000 kg) of plutonium converted to oxide.						
Commentary on 2016 Results (Action Plan if Not Met)	Achieved the cumulative annual target of 667 kg of plutonium metal converted to oxide. This result is important because it demonstrates the commitment towards the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapon-grade plutonium. Note: FY 2017 measures will eliminate the site identification and be covered under the US Surplus Plutonium Disposition Performance Measure.						

	Due to extended shutdown of operations of PF-4, this metric was changed to align with current expected production. There was no production in FY 2016. LANL, however, completed the restart readiness process, but production will not commence until startup is achieved, which is expected in FY 2017.
Documentation, Limitations, Methodology, Validation, and Verification	Given that there was no production in FY 2016, there is no documentation for the reporting period. Documentation for the cumulative production is the same as previously provided during the 4th QTR FY 2015 reporting period and is on file: Cost data from plutonium consolidated monthly status reports; and original documents such as a signed statement or email verifying target completion.

Program	Material Management and Minimization						
Performance Goal (Measure)	**U.S. Surplus Plutonium Disposition** - Cumulative kilograms (kg) of surplus plutonium converted to oxide in preparation for final disposition.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						767 kg	867 kg
Result						TBD	TBD
Endpoint Target	By FY 2028, convert 2 MT (2000 kg) of surplus plutonium to oxide.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Global Material Security

Program	Global Material Security						
Performance Goal (Measure)	**Mobile Detection System (MDS)** - Cumulative number of Mobile Detection Systems (MDS) deployed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			72 MDS	97 cumulative MDS	117 MDS	137 MDS	157 MDS
Result			**Exceeded** - 76	**Not Met** - 96	**Met** - 117	TBD	TBD
Endpoint Target	By the end of FY 2019, deploy 167 Mobile Detection Systems.						
Commentary on 2016 Results (Action Plan if Not Met)	Achieved the FY16 cumulative target of 117 Mobile Detection Systems (MDS) with 6 MDS units being deployed in Q1 of FY16. No additional MDS were deployed in Q2. Two additional MDS were deployed in Q3. Thirteen additional MDS were deployed in Q4. The total cumulative number of MDS deployed as of the end of Q4 FY16 is 117 units to 25						

	countries. NSDD's work in MDS is important because it provides host governments with a 'mobile' 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	Global Material Security						
Performance Goal (Measure)	**Radiological Buildings Protected** - Cumulative number of buildings with high-priority radiological materials secured.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	1,355 buildings	1,603 buildings	1,785 buildings	1,890 buildings	2,027 buildings	2,116 buildings	2,206 buildings
Result	**Exceeded** - 1,488	**Exceeded** - 1,674	**Exceeded** - 1,816	**Exceeded** - 1,958	**Exceeded** - 2,100	TBD	TBD
Endpoint Target	4,394 by 2033						
Commentary on 2016 Results (Action Plan if Not Met)	Exceeded the FY 16 cumulative target of 2,027 buildings protected with high priority nuclear and radiological materials secured by 73. In Q1, an additional 9 international buildings and 7 domestic buildings were secured. In Q2, an additional 10 international and 15 domestic buildings were secured. In Q3, an additional 16 international buildings and 15 domestic buildings were completed. In Q4, an additional 12 international buildings and 58 domestic buildings were completed. The cumulative total is 2,100. This result is important because it reduces the risk posed by radiological materials worldwide that could be used in crude nuclear bombs and radiological dispersal devices.						
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						

Program	Global Material Security
Performance Goal (Measure)	**Sites** - Cumulative number of sites with radiation detection systems deployed.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	496 sites (45 Megaports)	513 sites (45 Megaports)	548 sites/ports	575 cumulative sites	599 cumulative sites	618 cumulative sites	634 cumulative sites
Result	**Not Met** - 493	**Met** - 513	**Exceeded** - 550	**Met** - 575	**Exceeded** - 606	TBD	TBD
Endpoint Target	By the end of FY 2019, provide radiation detection systems to approximately 639 cumulative sites.						
Commentary on 2016 Results (Action Plan if Not Met)	Exceeded the FY16 cumulative target of 599 sites with radiation detection equipment by 7. Work completed in Q4 FY16 resulted in 21 sites. The total cumulative number of sites with radiation detection equipment installed as of the end of Q4 FY 2016 is 606. This work 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	Global Material Security						
Performance Goal (Measure)	**Sustainability** - Cumulative number of radiation detection systems that are being indigenously sustained.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			431 sites/ports	490 cumulative radiation detection systems	558 cumulative radiation detection systems	620 cumulative radiation detection systems	684 cumulative radiation detection systems
Result			**Not Met** - 412	**Not Met** - 488	**Not Met** - 538	TBD	TBD
Endpoint Target	By the end of FY 2020, transfer 786 radiation detection systems to indigenous sustainment.						
Commentary on 2016 Results (Action Plan if Not Met)	Missed FY16 annual target of 558, cumulative number of radiation detection systems that are being indigenously sustained. At the end of Q4, the cumulative number of radiation detection systems that were indigenously sustained for FY 16 (Q1; 10, Q2; 10, Q3; 8, Q4; 22) are 538. 538 is 20 sites short of the annual target of 558. The annual target was missed due to (1) an inability of the government of Kazakhstan to provide adequate funding for system maintenance, which is a result of the downturn in their economy, and (2) the political instability in Lebanon which complicates the transition process to self-sustainability. This work is important because it demonstrates that Nuclear Smuggling Detection and Deterrence (NSDD) is successfully transitioning sites to host government responsibility. Host governments are now self-sustaining sites with a capacity to detect, deter, and interdict illicit trafficking of nuclear and other radioactive materials.							

	Action Plan: Focus efforts to push for on schedule sustainment of sites in Kazakhstan and Lebanon in order to meet the metric in FY 2017. This will be dependent on the respective governments allocating budget/resources and placing contracts to indigenize their maintenance capability.
Documentation, Limitations, Methodology, Validation, and Verification	Schedules, trip reports, joint transition and sustainability plans.

Nonproliferation and Arms Control

Program	Nonproliferation and Arms Control						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	29 countries	31 countries	34 countries	35 countries	36 countries	37 countries	38 countries
Result	**Met** - 29	**Met** - 31	**Met** - 34	**Met** - 35	**Met** - 36	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Met FY16 target of 36 countries that meet critical export control system requirements. This number is derived from the annual update to engagement plans for foreign partners with whom INECP has an active outreach program. This result is important because it documents the success of the program in building capacity in national systems of export control to prevent the spread of WMD-related strategic 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 Arms Control						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			6 assessments	6 assessments	6 assessments	6 assessments	6 assessments
Result			**Met** - 6	**Met** - 6	**Exceeded** - 7	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Completed 7 bilateral physical protection security assessment reviews of foreign facilities holding U.S.-obligated nuclear material, exceeding the FY16 annual target of 6 assessments. In Q1, one security assessment was completed (France), no assessments were completed in Q2, four assessments were completed in Q3 (Mexico, Indonesia, and Japan (2)), and two assessments were completed in Q4 (Mexico Follow-up and Romania). 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 Arms Control						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	5 systems	5 systems	5 systems	5 systems	5 tools	5 tools	5 tools
Result	**Met** - 5	**Met** - 5	**Met** - 5	**Met** - 5	**Met** - 5	TBD	TBD
Endpoint Target	Annually transfer tools to international regimes and other countries to address identified safeguards deficiencies.						
Commentary on 2016 Results (Action Plan if Not Met)	Met FY16 target of 5 transfers. In Q1, Attended Single Chip Shift Register Designs were transferred to the Japan Atomic Energy Agency (JAEA) and an Aerosol Contaminant Extractor was transferred to the International Atomic Energy Agency (IAEA). In Q3, an Unattended Current Monitor Board (UCMB) was transferred to the IAEA. In Q4, KM200 Preamplifiers and Protocol Reporter 3 (PR3) software were transferred 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.

Nonproliferation Construction

Program	Nonproliferation Construction						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	70 % completed	81 % completed	90 % completed	TBD	TBD	N/A	N/A
Result	**Not Met** - 67.8	**Not Met** - 60	**Not Met** - 71.3	**Data Not Available**	**Data Not Available**	TBD	TBD
Endpoint Target	Performance measure targets will be adjusted to reflect the decision of the path forward for plutonium disposition.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Earned Value Management System (EVMS) data from MOX FFF Monthly Status Report - Earned value determined through physical examination, observation, computation, and inspection; as well as original documents such as a signed statement or email verifying target completion Footnote: The original performance measure targets were based on the current approved baseline of record with a TPC of $4.8B and a completion date of October 2016. This baseline is no longer valid and therefore not possible to correctly estimate the percent complete of the facility. The Department is still continuing construction as directed in both FY 2015 and FY 2016. However, we have not been reporting the percent complete because we no longer have a current validated baseline.						

Nuclear Counterterrorism and Incident Response Program

Program	Nuclear Counterterrorism and Incident Response Program
Performance Goal (Measure)	**Emergency Operations Compliance Rate (EOCR)** - Emergency Operations Compliance Rate (EOCR) measures the rate of Defense Nuclear Facility sites in full compliance with DOE 0 151.ID.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target						75 %	95 %
Result						TBD	TBD
Endpoint Target	Maintain an annual rate of 95% of DNF sites in full compliance with DOE 0 151.ID.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Nuclear Counterterrorism and Incident Response Program						
Performance Goal (Measure)	**Emergency Operations Readiness Index (EORI)** - 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	91 EORI	91 EORI	91 EORI	91 EORI	91 EORI	N/A	N/A
Result	**Exceeded** - 93	**Not Met** - 81	**Met** - 91	**Met** - 91	**Not Met** - 89	N/A	N/A
Endpoint Target	Annually maintain a Readiness Index of 91 or higher.						
Commentary on 2016 Results (Action Plan if Not Met)	Did not reach the target 91 Readiness level for FY16. The annual target was missed because of inadequate personnel availability and training deficiencies and lateness receiving balance of FY16 funding. This result is important because it tells the program managers that the performance analysis and reviews will identify problem areas that may need adjustments for achievement of the overall Readiness Index for the fiscal year. Note: FY 17 Measure will now be under Incident Response Readiness Index- Program mission has been expanded to develop and sustain the DOE all hazards capability. The proposed measure better aligns with current all hazards mission responsibilities. **Action Plan:** Emergency Response Aerial Measuring System (AMS) program training deficiencies are being addressed and one pilot and 3 aviation mechanics are being trained. One new mechanic is currently undergoing training and one pilot is waiting for final mission qualification training. Disposition, Forensics Evaluation, & Analysis Team (DFEAT) personnel and training deficiencies are being addressed.						

Documentation, Limitations, Methodology, Validation, and Verification	ARMS Reports; Weekly Meetings; Daily situational reports; Daily Infrastructure reports; ARMS website https://arms.orau.gov/; After action reports – evaluators; After action reports – controllers; State, local, & federal reports validating the DOE/NNSA response efforts; Task Orders/Work Authorizations

Program	Nuclear Counterterrorism and Incident Response Program						
Performance Goal (Measure)	**Incident Response Readiness Index (IRRI)** - IRRI tracks the overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						91 IRRI Index	91 IRRI Index
Result						TBD	TBD
Endpoint Target	Annually, maintain a Readiness Index of 91 or higher.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Nuclear Counterterrorism and Incident Response Program						
Performance Goal (Measure)	**Tier Threat Modeling Archive - Validation (TTMA-V)** - Percent complete toward validating national 3-D predictive modeling capability using four different experimental series designed to produce data needed to reconstruct nuclear threat device emergency disablement scenarios.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target		15 % complete	35 % complete		35 %	50 %	65 %
Result		**Met** - 15			**Met** - 35	TBD	TBD
Endpoint Target	By the end of FY 2020, complete the validation of the national 3-D predictive modeling capability using four different experimental series designed to produce data needed to reconstruct nuclear threat device emergency disablement scenarios. TTMA-V is a cornerstone joint project for the Joint Disablement Campaign that will build confidence in the models used to develop key products throughout the interagency to include assessments, tool development support, and procedure development. Follow-on projects are identified but must wait for the refinements this project will produce. This effort is coordinated with the Defense Threat Reduction Agency.						

	Note: Due to congressional funding provided in FY 2014 and FY 2015, these activities were not executed; the experimental validation test series was delayed two years. A change request for the FY 2015 through FY 2020 targets was approved to reflect the funding reduction.
Commentary on 2016 Results (Action Plan if Not Met)	After a pause due to budget reductions, TTMA-V achieved FY16 target of 35% completion toward validating USG predictive modeling capabilities, with the completion of technical and experimental work for TTMA-V Campaign 1 activities. Ongoing work in FY16 included data analysis of these efforts. The continued progression of TTMA-V activities enhances the USG ability to develop predictive render safe capabilities.
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly Reports to HQ on Milestones and Reportable Activities

Program	Nuclear Counterterrorism and Incident Response Program						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target		9,500 trained personnel	10,200 trained personnel	11,000 trained personnel	11,700 trained personnel	12,500 trained personnel	13,300 trained personnel
Result		**Met** - 9,500	**Exceeded** - 10,280	**Met** - 11,000	**Met** - 11,700	TBD	TBD
Endpoint Target	By the end of FY 2020, train 14,800 officials in Weapons of Mass Destruction (WMD) Counterterrorism (CT) prevention and response. Note: The Office of Counterterrorism Policy and Cooperation's Weapons of Mass Destruction (WMD) Counterterrorism 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.						
Commentary on 2016 Results (Action Plan if Not Met)	Fully achieved the FY target of training a cumulative 11,700 first responders, security, and WMD CT officials. Executed tabletop exercises at the Providence Portland Medical Center in Portland, OR, Blood Bank of Alaska in Anchorage, AK, Special Operations Command Pacific (SOCPAC) workshop in Yogyakarta, Indonesia, Pacific Area Security Sector Working Group (PASSWG) workshop in Kathmandu, Nepal, and with Egyptian and Moroccan officials in Italy to train an additional 291 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.
Documentation, Limitations, Methodology, Validation, and Verification	Exercise Attendance Lists and After-Action Reports

Defense Nuclear Nonproliferation Research and Development

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	90 % index	90 % index	90 % index	90 % index	90 % index	90 % index	90 % index
Result	**Met** - 90	**Met** - 90	**Met** - 90	**Met** - 90	**Met** - 90	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Achieved the annual target by delivering GBD-III-4 and -5 payloads and by launching and successful testing-on-orbit two payloads delivered in prior years, GPS Block II-F-11 and -12, in accordance with schedule negotiated with the US Air Force. 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	2012	2013	2014	2015	2016	2017	2018
Target			20 % progress	50 % of progress	70 % of progress	90 % of progress	100 % of progress
Result			**Met** - 20	**Met** - 50	**Met** - 70	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Achieved the cumulative target of 70% progress, which correlates to meeting the targeted technology readiness level (TRL) goal as specified in the Nuclear Material Production Detection Roadmap's investment strategy for 12 separate requirements. This result is important because it advances U.S. technical capabilities to detect, characterize, and monitor the foreign production of special nuclear materials.						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			20 % progress	50 % progress	70 % of progress	90 % of progress	100 % of progress
Result			**Met** - 20	**Met** - 50	**Met** - 70	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Achieved the cumulative target of 70% progress, which correlates to meeting the targeted technology readiness level (TRL) goal as specified in the Nuclear Weapons and Material Security Roadmap's investment strategy for 18 separate requirements. This result is important because it advances U.S. technical capabilities in support of nuclear counter terrorism and incident response to detect, characterize, and monitor the foreign development of nuclear weapons.						
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)	**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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	60 % of progress	75 % of progress	90 % of progress	95 % of progress	100 % of progress	N/A	N/A
Result	**Met** - 60	**Met** - 75	**Met** - 90	**Met** - 95	**Met** - 100	N/A	N/A
Endpoint Target	By the end of FY 2016, demonstrate the next generation of technologies and methods to detect uranium-235 enrichment activities.						
Commentary on 2016 Results (Action Plan if Not Met)	Achieved the cumulative target of 100% progress demonstrating progress towards completion of 9 deliverables in FY16. Progress was based on meeting research tasks in life cycle plans, on feedback from Independent Reviews, on successful demonstration of capabilities, and on annual program review briefings, that tracked with planned milestones. This result is important because it increases the U.S. capability to detect foreign nuclear weapons production activities. Successfully completed a detailed, eight-year research and development plan, significantly advancing the state-of-the-art in proliferation detection and focusing on detection, location and characterization of foreign production of highly enriched uranium.						
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						

Naval Reactors

Naval Reactors

Program	Naval Reactors						
Performance Goal (Measure)	**S1B Reactor Plant Design** - Cumulative percentage of work complete on the *Columbia*-Class submarine reactor plant design.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	12 % complete	17 % complete	22 % complete	32 % complete	43 % complete	55 % complete	65 % complete
Result	**Exceeded** - 15.6	**Exceeded** - 18.4	**Exceeded** - 25.7	**Met** - 34.6	**Met** - 45.3	TBD	TBD
Endpoint Target	By the end of FY 2027, complete 100% of the *Columbia*-Class submarine reactor plant design (formerly known as the Ohio-Class Replacement). 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. FY 2013 and out performance measure targets have been changed to reflect the delayed construction start.						
Commentary on 2016 Results (Action Plan if Not Met)	As of 9/30/2016, 45.3% of the OHIO replacement submarine reactor plant has been completed. This exceeds the FY16 target of 43%. Milestones achieved in FY16: delivered production fuel and poison; CDM test station #5 delivered to Bettis; issued final hydraulic design pattern strategy; issued NEWT21 direct transient qualification. 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 VIRGINIA Class by more than 10 years, and allow fulfillment of its mission with two fewer submarines than the OHIO Class.						
Documentation, Limitations, Methodology, Validation, and Verification	S1B Propulsion Plant Planning Estimate & Actual Reporting						

Energy Efficiency and Renewable Energy

Weatherization and Intergovernmental Programs

Program	Weatherization and Intergovernmental Programs						
Performance Goal (Measure)	**OWIP - Retrofits** - Weatherize homes of low income families						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	10,000 homes weatherized	21,286 homes weatherized	24,600 homes weatherized	33,100 homes weatherized	33,600 homes weatherized	33,000 homes weatherized	N/A
Result	**Exceeded** - 31,871	**Met** - 21,286	**Exceeded** - 38,000	**Exceeded** - 34,220	**Not Met** - 31,370	TBD	N/A
Endpoint Target	Measure is discontinued as of FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	The Average Cost Per Unit (ACPU) for the last two fiscal years indicates that there was a jump of $1537 in the ACPU unit from 2016 (ACPU $5571) versus 2015 (ACPU $4034). When developing the estimate for GPRA, the percent increase in ACPU was not foreseen. Second, two large Grantees (>than $5 million in funding) were in state budget impasse situations in FY 2016 that hampered final production numbers. In addition, uncertainty due to operating under a continuing resolution discourages grantees from increasing production using prior year funds; reserves for possible rescission reduces grants allocations and award amounts; and precludes state grantees from shifting their grant start date to earlier in the fiscal year. **Action Plan:** Targets will be revised to reflect changes in increased ACPU.						
Documentation, Limitations, Methodology, Validation, and Verification	Homes weatherized are reported on a quarterly basis. Reports are due 30 days after the close of the applicable reporting period through PAGE (Performance and Accountability for Grants in Energy) -- the online tool for grant performance reporting. Quarterly reports are quality-reviewed by Project Officers and approved before submission as final data. Based solely on retrofits supported through Weatherization Assistance Program non-ARRA formula funding.						

Bioenergy Technologies

Program	Bioenergy Technologies						
Performance Goal (Measure)	**Biomass - Thermochemical** - Reduce modeled thermochemical conversion cost of a combined gasoline and diesel production ($/gallons of gasoline equivalent)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			$ 4.1 /gge	$ 3.7 /gge	$ 3 /gge	$ 2.47 /gge	N/A
Result			**Met** - 4.1	**Exceeded** - 3.69	**Met** - 3	TBD	N/A
Endpoint Target	$2.47/gge by 2017 ($2011) Measure is being discontinued in FY18 as overarching verification goal is scheduled to be met by the end of FY17. The program is in the process of establishing a new performance measure to guide activities in FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	Facility modifications have been completed as documented in milestone reports and as verified by production of quantities of pyrolysis oil for upgrading. Thermochemical technical targets have been met which result in reduction in projected mature-plant fuel cost from $3.69/gge to $3.00/gge (well within the accuracy of the estimates +/-30%). These projected fuel cost estimates are documented in techno-economic analysis milestone reports.						
Documentation, Limitations, Methodology, Validation, and Verification	Modeled cost of a combined gasoline and diesel production. Fast Pyrolysis and Hydrotreating: State of Technology and Projections to 2017 PNL-23294. Design case and state of technology described in Jones, SB and LJ Snowden-Swan, November 2013.						

Geothermal Technology

Program	Geothermal Technology
Performance Goal (Measure)	**Geothermal - Systems** - Reduce the modeled Levelized Cost of Energy (LCOE) from newly developed geothermal systems (cents/kWh) 2013+: includes both hydrothermal and Enhanced Geothermal Systems (EGS). 2012: EGS only

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	18 cents/KWh for 24-hour electricity production	22.5 cents/KWh for 24-hour electricity production	22.4 cents/kWh	22.3 cents/kWh	22.2 cents/kWh	22 cents/kWh	21.8 cents/kWh
Result	**Met** - 18	**Met** - 22.5	**Met** - 22.4	**Met** - 22.3	**Met** - 22.2	TBD	TBD
Endpoint Target	6 cents/kWh by 2030						
Commentary on 2016 Results (Action Plan if Not Met)	GTO met the cost-improvement goal of 22.2 cents/kWh by demonstrating the ability to increase well injectivity using Enhanced Geothermal System (EGS techniques) at the Raft River Geothermal power plant. Modeling the impact of improvements to well injectivity on project LCOE in GTO's GETEM techno-economic model demonstrate that these advances allow GTO to reach their FY16 goal.						
Documentation, Limitations, Methodology, Validation, and Verification	With the help of Geothermal Electricity Technology Evaluation Model (GETEM), resource key parameters of geothermal such as; temperature, depth, productivity (average flow rate per well), type (hydrothermal, EGS, low temperature), and quality of the resources are used to estimate the nth unit of costs for a successful project from a multi-prospect portfolio. Assumes a 24-hour electricity production and a non-uniform discount rate.						

Hydrogen and Fuel Cell Technologies

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 (kW/gram of platinum group metal)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	5.8 kW/g	5.9 kW/g	6.3 kW/g	6.5 kW/g	6.9 kW/g	7.1 kW/g	N/A
Result	**Met** - 5.8	**Exceeded** - 6	**Met** - 6.3	**Exceeded** - 6.6	**Met** - 6.9	TBD	N/A
Endpoint Target	8 kW/g by 2020, $30/kW fuel cell system cost target Measure discontinued in FY18 due to the strategic decision to shift towards earlier stage research. Industry will continue to improve the kW/gram of PGM catalysts without additional government investment. The program is in the process of establishing a new performance measure to guide activities in FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	GM achieved catalyst specific power of 6.9 kW/gPGM which meets the Q4 and FY16 GPRA milestone. This was demonstrated in a 50 cm^2 membrane electrode assembly (MEA), tested at a pressure of 150kPa with GM's PtCo catalyst supported on high surface area carbon. The total platinum group metal loading (both electrodes) was 0.125 mg/cm^2 and the MEA performance at rated power (150kPa) was 0.86 W/cm^2.						
Documentation, Limitations, Methodology, Validation, and Verification	Determined kw per gram of PGM in controlled laboratory testing. Documented in ANL Report: https://energy.gov/sites/prod/files/2016/08/f33/fcto_cwg_july2016_kongkanand.pdf						

Solar Energy

Program	Solar Energy						
Performance Goal (Measure)	**Solar - Photovoltaic (PV)** - Reduce the modeled Levelized Cost of Energy (LCOE) Solar PV energy at utility scale (cents / kilowatt hour, kWh)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	17 cents/kWh (range 13 – 17)	15 cents/kWh (range 13 – 17)	13 cents/kWh	10 cents/kWh	9 cents/kWh	7 cents/kWh	6 cents/kWh
Result	**Met** - 16	**Met** - 15	**Exceeded** - 11	**Met** - 10	**Exceeded** - 8.2	TBD	TBD
Endpoint Target	6 cents/kWh by 2020, cost competitive with traditional electricity sources						

Commentary on 2016 Results (Action Plan if Not Met)	The installed cost of a one-axis tracking PV system was $1.49/W. This translates to an LCOE of 8.2 cents/kWh for an average region.
Documentation, Limitations, Methodology, Validation, and Verification	Results are based on the technical report, "U.S. Solar Photovoltaic System Cost Benchmark: Q1 2016," published by NREL. Levelized costs are without subsidies.

Water Power

Program	Water Power						
Performance Goal (Measure)	**Water - Dams** – Reduce the modeled Levelized Cost of Energy (LCOE) from hydropower from non-powered dams (cents/kWh)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				Establish Baseline	9.8 cents/kWh	9.7 cents/kWh	9.6 cents/kWh
Result				**Met** - 10	**Met** - 9.8	TBD	TBD
Endpoint Target	9.2 cents/kWh by 2020 7.5 cents/kWh by 2030						
Commentary on 2016 Results (Action Plan if Not Met)	The hydropower program modeled the 2016 cost of energy for Non-Powered Dams at 9.8 cents/kWh.						
Documentation, Limitations, Methodology, Validation, and Verification	Although the baseline for the hydropower LCOE estimate is derived from empirical data, the sample set of new hydropower builds, on an annual basis, is too small to establish an empirically based national average annually. The goals and trajectories are based on expert opinion as published in the Hydropower Vision Report and reflect cost reductions in Capital Expenditures. https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source						

Program	Water Power
Performance Goal (Measure)	**Water - Marine & Hydrokinetic (MHK)** – Reduce the modeled Levelized Cost of Energy (LCOE) from Marine & Hydrokinetic technologies (cents/kWh) 2016: Double energy capture per cost (meters per million dollars) 2015: Increase power-to-weight ratio from a baseline of 0.25 (kW/ton) 2014: Reduce the cost of energy from Marine & Hydrokinetic technologies (cents/kWh) 2013 & 2012: Test marine and hydrokinetic devices and components to determine baseline cost, performance, and reliability. (Cumulative number of devices tested)

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	3	10 devices	6 cents/kWh	0.375 kW/ton	3 m/$M	66 cents/kWh	64 cents/kWh
Result	**Met** - 3	**Met** - 10	**Exceeded** - 53	**Exceeded** - 0.4	**Met** - 3	TBD	TBD
Endpoint Target	27 cents / kWh by 2030						
Commentary on 2016 Results (Action Plan if Not Met)	The MHK program received results from the Wave Energy Prize that the ACE metric target of 3 m/$M was met in FY16. Testing eight of nine Finalist teams' 1/20th scale devices has concluded this at the MASK Basin. Press Release: https://waveenergyprize.org/newsroom/energy-dept-announces-wave-energy-prize-finalist-teams						
Documentation, Limitations, Methodology, Validation, and Verification	Wave energy cost target is an unsubsidized cost of energy at utility scale, based on Humboldt Bay standardized resource conditions. The goals and trajectories are based on expert opinion as published in the Hydropower Vision and reflect cost reductions in Capital Expenditures. https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source						

Program	Water Power						
Performance Goal (Measure)	**Water - Streams** – Reduce the modeled Levelized Cost of Energy (LCOE) from new stream developments (cents/kWh)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				Establish Baseline	11.7 cents/kWh	11.5 cents/kWh	11.4 cents/kwH
Result				**Met** - 11.9	**Met** - 11.7	TBD	TBD
Endpoint Target	10.9 cents/kWh by 2020 8.9 cents/kWh by 2030						
Commentary on 2016 Results (Action Plan if Not Met)	The hydropower program modeled the 2016 cost of energy for New-Stream Reach Development at 11.7 cents/kWh.						
Documentation, Limitations, Methodology, Validation, and Verification	Target is for small, low-head developments. Although the baseline for the hydropower LCOE estimate is derived from empirical data, the sample set of new hydropower builds, on an annual basis, is too small to establish an empirically based national average annually. The goals and trajectories are based on expert opinion as published in the Hydropower Vision Report and reflect cost reductions in Capital Expenditures. https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source						

Wind Energy

Program	Wind Energy						
Performance Goal (Measure)	**Wind - Offshore** – Reduce the modeled Levelized Cost of Energy (LCOE) from off-shore wind energy (cents/kWh)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	24.3 cents/kWh	22 cents/kWh	21.5 cents/kWh	19.9 cents per kwh	18.1 cents/kwh	17.2 cents/kWh	16.2 cents/kWh
Result	**Met** - 24.3	**Met** - 22	**Exceeded** - 20.3	**Not Met** - 20.8	**Met** - 18.1	TBD	TBD
Endpoint Target	14.9 cents/kWh by 2020 9.3 cents/kWh by 2030						
Commentary on 2016 Results (Action Plan if Not Met)	Derived from average market data in CY2015.						
Documentation, Limitations, Methodology, Validation, and Verification	Fixed-bottom installation at a U.S. reference site with a wind speed of 8.9m/s and an average market discount rate derived from European installations in 2015. Capital expenses for LCOE values are based on empirical data derived from the average of OSW installations in Europe. A 20 year plant life is assumed. All terms and methodologies listed above are referenced in the 2015 Cost of Energy Review: http://www.nrel.gov/docs/fy17osti/66861.pdf The jump in FY15 costs are skewed due to several highly expensive projects built unusually far from shore and in deep water off the coast of Germany						

Program	Wind Energy						
Performance Goal (Measure)	**Wind - Onshore** – Reduce the modeled Levelized Cost of Energy (LCOE) from land-based wind energy (cents/kWh) 2012: measure for modeled reduction in cents/kWh; 2012+ are survey results.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	8.6 cents/kwh	8.3 cents/kWh	7.7 cents/kWh	6.9 cents/kwh	5.6 cents/kWh	5.5 cents/kWh	5.4 cents/kWh
Result	**Met** - 8.6	**Met** - 8.3	**Met** - 7.4	**Met** - 6.9	**Met** - 5.6	TBD	TBD
Endpoint Target	5.2 cents/kWh by 2020 3.1 cents/kWh by 2030						
Commentary on 2016 Results (Action Plan if Not Met)	Assumes a 25 year plant life. Derived from average market data in CY2015.						
Documentation, Limitations, Methodology, Validation, and Verification	The 2016 value listed above uses the following assumptions: real market Weighted Average Cost of Capital (WACC) of 5.6% (updated from previously used historical 2010 WACC of 7%); national capacity weighted average installed CapEx and OpEx values; 7.25 m/s Wind speed @ 50m hub height; and 25 year plant life (updated from previously used historical 2010 plant life of 20 years). All terms and methodologies listed in 2015 Cost of Energy Review: http://www.nrel.gov/docs/fy17osti/66861.pdf						

Advanced Manufacturing Office

Program	Advanced Manufacturing Office						
Performance Goal (Measure)	**AMO – R&D Consortia** - Number of Manufacturing Research and Development Consortia selected for negotiation to demonstrate advanced material and process technologies, leading to commercialization						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target		2 Consortia	2 Consortia	1 Consortia	1 Consortia	2 Consortia	N/A
Result		**Met** - 2	**Met** - 2	**Met** - 1	**Met** - 1	TBD	N/A
Endpoint Target	8 consortia by 2017. Measure discontinued in FY18 due to a shift in focus towards early-stage R&D. The program is in the process of establishing a new performance measure to guide activities in FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	Smart Manufacturing Leadership Coalition (SMLC) selected for negotiation to lead the Smart Manufacturing Innovation Institute.						
Documentation, Limitations, Methodology, Validation, and Verification	These consortia are part of a multi-agency National Network for Manufacturing Innovation and focus on the development of key technologies for industry. White House Press Release: https://www.whitehouse.gov/the-press-office/2016/06/20/fact-sheet-president-obama-announces-winner-new-smart-manufacturing						

	Past selections include: the Critical Materials Institute (CMI) and Manufacturing Demonstration Facility (MDF) in FY13, PowerAmerica and the Carbon Fiber Technology Facility (CFTF) in FY14 and the Institute for Advanced Composites Manufacturing Innovation (IACMI) in FY15.

Building Technologies

Program	Building Technologies						
Performance Goal (Measure)	**Buildings - Lighting** - Decrease the manufacturing cost of a warm white LED package. (Lumens / $) 2012 & 2013: Increase lighting efficacy of "warm white light" solid-state lighting in a lab device.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	127 lm/W	148 lm/W	128 lm/$	144 lm/$	188 lm/$	210 lm/$	240 lm/$
Result	**Exceeded** - 133.1	**Met** - 148	**Exceeded** - 150	**Exceeded** - 176	**Met** - 188	TBD	TBD
Endpoint Target	271 lm/$ by 2020						
Commentary on 2016 Results (Action Plan if Not Met)	Lumileds achieved, in a laboratory prototype, a performance of 188 lm/$ (at 25C, warm white, and 1W/mm2). This was demonstrated on a modified Luxeon TX chip package with improved packaging materials, with support from DOE						
Documentation, Limitations, Methodology, Validation, and Verification	Cost target is for a laboratory prototype. Continuity of improvements in performance and cost are achieving a national energy savings of 542 tBtu/year from installed SSL products. EERE Press Release: https://energy.gov/eere/success-stories/articles/eere-success-story-improving-efficiency-and-lowering-cost-led-lighting						

Federal Energy Management Program

Program	Federal Energy Management Program						
Performance Goal (Measure)	**FEMP - Investments** - Total Federal Investment in Facilities Energy Conservation Measures Government-Wide ($Million)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				$ 750 Million	$ 750 Million	$ 750 Million	$ 1,770 Million
Result				**Exceeded** - 1,980	**Exceeded** - 1,735	TBD	TBD
Endpoint Target	$12.4 Billion in total efficiency investment between 2018 and 2024 required to meet the 25% energy reduction goal for 2025 vs. 2015 baseline.						

	$1,770 million annually through 2024 to be invested by Federal agencies Government-wide through direct obligations and through performance contracting (Energy Savings Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs)).
Commentary on 2016 Results (Action Plan if Not Met)	Investment in FY 2016 from performance contracting totaled $1,121 million—more than in any prior year, due in large part to the Performance Contracting Challenge spearheaded by the White House Office of Management and Budget. Combined with agency direct obligations, which declined significantly from the prior year, efficiency investment in FY 2016 totaled $1,735 million. DOE IQIQ awards in FY 2016 totaled $719 million.
Documentation, Limitations, Methodology, Validation, and Verification	Agencies report project investment funded through direct obligations and performance contracting annually in their reports to DOE required under 42 U.S.C § 8258(a), however DOE-FEMP does not receive these investment amounts until mid-way through the following fiscal year. Therefor direct obligations cannot be reported on quarterly basis during current fiscal year, only DOE IDIQ performance contracting awards can be accurately reported on a quarterly basis by FEMP. Government wide performance contracting investment is also tracked by OMB, with FEMP support, and can be reported quarterly during the fiscal year. Investment of $12.4 billion is required to reduce Federal facility energy use by 42.7 trillion Btu to meet the reduction goal of 25% in FY 2025 vs. FY 2015. The 42.7 trillion Btu required reduction assumes a 6.2% reduction in facility footprint (based on Federal Real Property Profile data) and anticipated impact of investment awarded in FY 2015, FY 2016, and FY 2017 (see above). Annual energy saving returned by $1 of investment is based on average return from the $2.2 billion of investment from the DOE FEMP IDIQ ESPCs awarded from FY 2012 through December 2016 (3,449 Btu saved annually per $1).

Vehicle Technologies

Program	Vehicle Technologies						
Performance Goal (Measure)	**Vehicles - Batteries** - Reduce the cost of batteries for Electric Vehicles (EVs) ($/kWh)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	$ 500 /kWh	$ 400 /kWh	$ 300 /kWh	$ 275 /kWh	$ 250 /kWh	$ 225 /kWh	$ 200 /kWh
Result	**Exceeded** - 485	**Exceeded** - 325	**Met** - 289	**Exceeded** - 268	**Exceeded** - 245	TBD	TBD
Endpoint Target	$125/kWh by 2022						
Commentary on 2016 Results (Action Plan if Not Met)	The current cost estimate is derived from three DOE-funded battery developers. The cost projections from the DOE funded projects are derived using material costs and cell designs provided by the developers, and subsequently tested by DOE. The battery cost is derived for batteries designed to meet DOE/US Advanced Battery Consortium performance targets, including the 1,000 cycle life requirement. The battery development projects focus on high voltage and high capacity cathodes, graphite and/or advanced alloy anodes and processing improvements.						

Documentation, Limitations, Methodology, Validation, and Verification	Achieving the endpoint target will enable cost competitive market entry of EVs by reducing the cost of electrical vehicle batteries by approximately 70 percent (roughly $14,000) from FY 12. Battery cost projections are derived by battery manufacturers using USABC's battery manufacturing cost model for specific battery cell and module designs that meet DOE/USABC system performance targets and are based on a production volume of at least 100,000 batteries per year. Documentation: https://build.export.gov/build/groups/public/@eg_main/documents/webcontent/eg_main_106910.pdf

Electricity Delivery and Energy Reliability

Transmission Reliability (formerly Clean Energy Transmission and Reliability)

Program	Transmission Reliability (formerly Clean Energy Transmission and Reliability)						
Performance Goal (Measure)	**Advanced Modeling Grid Research** - Development of capabilities in understanding, modeling, and predicting grid behavior in real-time.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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	Demonstrate simulation capabilities in a prototype operational tool that can be used in real-time to identify available operating margins	Develop and test advanced computational capabilities for simulating power system behavior in a real-world environment	N/A
Result	**Not Met** - 0	**Met** - 1	**Met** - 1	**Met**	**Met**	TBD	N/A
Endpoint Target	Realization of advanced modeling capabilities, including dynamic operation, real-time analysis, and predictive response. This Performance Goal is not continued into FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	Demonstrated simulation capabilities in a prototype operational tool that can be used in real-time to identify available operating margins						
Documentation, Limitations, Methodology, Validation, and Verification	Pacific Northwest National Laboratory quarterly reports						

Program	Transmission Reliability (formerly Clean Energy Transmission and Reliability)						
Performance Goal (Measure)	**Energy Systems Risk and Predictive Capability** - Provide Federal agencies, states, and sector stakeholders with independent and transparent analyses of risks to energy infrastructure systems and supply chain impacts.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				Validate and verify energy risk analysis products developed using the analytical framework	Release products to stakeholders incorporating advanced predictive analytics on interconnected energy infrastructure systems to include understanding of how historical asset performance affects overall system performance.	Deploy initial analytical products assessing risk and improving decisions for energy infrastructure systems.	N/A
Result				**Met**	**Met**	TBD	N/A
Endpoint Target	This subprogram develops tools and robust predictive analytic products which assist decision makers in assessing current and future risks to interdependent energy systems. This Performance Goal is not continued into FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	Released analysis products (internal and external)						
Documentation, Limitations, Methodology, Validation, and Verification	Framework for Modeling High Impact, Low-Frequency Power Grid Events to Support Risk Informed Decisions: http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-24673.pdf Sea Level Rise and Storm Surge Effects on Energy Asset: http://energy-oe.maps.arcgis.com/apps/MapSeries/index.html?appid=244e96e24b5a47d28414b3c960198625 Joint Electromagnetic Pulse Resilience Strategy: https://www.energy.gov/sites/prod/files/2016/07/f33/DOE_EMPStrategy_July2016_0.pdf						

Program	Transmission Reliability (formerly Clean Energy Transmission and 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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 in NERC Std BAL-003.	Develop a prototype wide-area synchrophasor-based voltage stability tool	Develop and test methods for validating power system models using real-time data in a real-time environment to support operations and improve reliability.	Continue developing and testing methods for validating power system models using real-time synchrophasor data in a real-time environment to support operations and improve reliability and resiliency.
Result	**Met** - 1	**Met** - 1	**Met** - 1	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Complete technical report demonstrating use of prototype software tool to conduct a measurement based assessment of voltage stability						
Documentation, Limitations, Methodology, Validation, and Verification	Lawrence Berkeley National Laboratory quarterly progress reports						

Resilient Distribution Systems (formerly Smart Grid R&D)

Program	Resilient Distribution Systems (formerly Smart Grid R&D)						
Performance Goal (Measure)	**Smart Grid R&D** - Increase in load factor, reduction in outage durations (system average interruption duration index, or SAIDI) of the distribution system, and reduction in outage time of critical loads on smart microgrids.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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.	Release the first generation of a microgrid controller (i.e., Complete System-Level Efficient and Interoperable Solution for Microgrid Integrated Controls, also known as CSEISMIC 1.0) with full documentation of the architecture, device controllers, and a use case with a distribution management system.	Complete development of a design support tool that is used by at least one remote community for designing an AC or DC microgrid for off-grid applications.	Complete development of the Advanced Distribution Management System (ADMS) core analytics engine for the open-source distribution system platform.
Result	**Met** - 12	**Met** - 1	**Met** - 1	**Met**	**Met**	TBD	TBD
Endpoint Target	Achievement of a self-healing and resilient distribution grid, with integration of networked microgrids and transactive control signals operating under the ADMS, that allows for widespread deployment of distributed renewable and clean energy resources and demand response by 2030.						
Commentary on 2016 Results (Action Plan if Not Met)	Released the first generation of a microgrid controller (i.e., Complete System-Level Efficient and Interoperable Solution for Microgrid Integrated Controls, also known as CSEISMIC 1.0) with full documentation of the architecture, device controllers, and a use case with a distribution management system.						

Documentation, Limitations, Methodology, Validation, and Verification	Oak Ridge National Laboratory FY16 Quarterly Reports: Electricity Delivery R&D Program

Cybersecurity for Energy Delivery Systems

Program	Cybersecurity for Energy Delivery Systems						
Performance Goal (Measure)	**Cybersecurity** - Develop new protective measures to reduce risks from cyber incidents.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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	Demonstrate a tool that establishes a tailored trustworthy space for one energy delivery field device.	Complete preliminary design of an early stage technology that establishes a tailored trustworthy space for one substation control system component.	Complete preliminary design of an early stage technology for prevention, detection, mitigation, or resilience against cyber incidents in energy delivery systems.
Result	**Met** - 1	**Met** - 1	**Met** - 1	**Met**	**Met**	TBD	TBD
Endpoint Target	By 2020, resilient energy systems are designed, installed, operated and maintained to survive a cyber incident while sustaining critical functions.						
Commentary on 2016 Results (Action Plan if Not Met)	This annual target has been met under the Schweitzer Engineering Laboratories Inc. (SEL) award # DE-OE0000522 titled "Watchdog". The Watchdog team has completed development of the commercial SEL-2740S network switch with the conclusion of end user validation tests. There are plans to deploy this new technology on power systems so this technology will start protecting our nation's infrastructure before the end of the year. Please see: https://selinc.com/products/2740S/						
Documentation, Limitations, Methodology, Validation, and Verification	Technology and product has been demonstrated and now commercialized by Schweitzer Engineering Laboratories Inc. Please see: https://selinc.com/products/2740S/						

Energy Storage

Program	Energy Storage

Performance Goal (Measure)	**Energy Storage** - Lower the cost of grid-scale (>1 mw) energy storage technologies.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	560 $/kWh for a 4 hour system	475 $/kWh for a 4 hour system	400 $/kWh for a 4 hour system	325 $/kWh for a 4 hour system	300 $/kWh for a 4 hour system (vanadium /vanadium electrolyte)	Transition to new aqueous soluble organic flow systems with the goal of substantial future cost reductions. $350/kWh for a 4 hour system (aqueous soluble organic electrolyte).	$250/kWh for a 4 hour system (aqueous soluble organic electrolyte)
Result	**Met** - 500	**Met** - 475	**Met** - 400	**Met** - 325	**Met** - 300	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Based on the results achieved in FY16, the system cost for a commercial 1MW/4MWh redox flow battery system is $300/kWh.						
Documentation, Limitations, Methodology, Validation, and Verification	Pacific Northwest National Laboratory email update to program manager						

Transmission Permitting and Technical Assistance

Program	Transmission Permitting and Technical Assistance						
Performance Goal (Measure)	**Technical Assistance** - Number of states to which the program provides, upon request, assistance in designing and implementing electricity policies, statutes and regulations.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	30 states/tribes assisted	35 states/tribes assisted	35 states/tribes assisted	40 states and tribes assisted	50 states/tribes assisted	45 states/tribes assisted	40 states/tribes assisted
Result	**Met** - 30	**Met** - 35	**Met** - 35	**Met** - 40	**Met** - 50	TBD	TBD
Endpoint Target	Increased access to reliable, affordable, and sustainable energy sources.						
Commentary on 2016 Results (Action Plan if Not Met)	Provided technical assistance to 50 states and tribes.						
Documentation, Limitations, Methodology, Validation, and Verification	Internal technical assistance tracking database						

Infrastructure Security and Energy Reliability (ISER)

Program	Infrastructure Security and Energy Reliability (ISER)						
Performance Goal (Measure)	**ISER - Informational Awareness** - Improve information sharing among energy sector stakeholders as measured by the number of active accounts in the EAGLE-I platform; both the total number and the diversity of participation from mission partners, e.g., state Emergency Operations Centers.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						500 active accounts with more than 5% from state and local partners	1,000 active accounts with more than 10% from state local and private sector partners
Result						TBD	TBD
Endpoint Target	EAGLE-I is the predominant source for energy situational awareness for mission partners during an emergency as measured by having more than 2,000 active accounts from all types of stakeholders.						
Commentary on 2016 Results (Action Plan if Not Met)							

Documentation, Limitations, Methodology, Validation, and Verification	

Program	Infrastructure Security and Energy Reliability (ISER)						
Performance Goal (Measure)	**ISER - Situational Awareness** - Improve awareness of near real-time monitoring situational awareness tool, across the Federal Government ensuring that this tool is available to interagency partners for use in their operations centers and other appropriate situations.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	10 % SAIC performance	30 % situational awareness capability index score	45 % situational awareness capability index score	60 % situational awareness capability index score	70 % situational awareness capability availability	80% situational awareness capability availability	N/A
Result	**Met** - 10	**Met** - 30	**Met** - 45	**Met** - 60	**Met** - 70	TBD	N/A
Endpoint Target	Maintain the availability to near real-time energy situational awareness tools to interagency partners at greater than 90%.						
Commentary on 2016 Results (Action Plan if Not Met)	Met 70% situational awareness capability index score						
Documentation, Limitations, Methodology, Validation, and Verification	ISER internal situational awareness capability index score calculator						

Fossil Energy

Fossil Energy R&D

Program	Fossil Energy R&D						
Performance Goal (Measure)	**CCS Demonstrations** - Initiate operation of CCS demonstration projects - Initiating operation of CCS demonstration projects will help to establish that carbon capture, compression of CO2 and injection, combined with long term monitoring, verification, accounting, and assessment (MVAA), can be performed at commercial scale at both power plants and industrial sites while continuing to maintain reliable plant operations.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	3 CCS Demonstrations initiated	2 CCS project initiated	1 CCS demonstration project initiated	1 CCS Demonstration project initiated	3 CCS projects initiated operation	4 CCS projects initiated operation	N/A: This goal is no longer relevant as the program is now focused on early-stage R&D.
Result	**Met** - 3	**Met** - 2	**Met** - 1	**Exceeded** - 4	**Not Met** - 1	TBD	N/A
Endpoint Target	Operations initiated at a minimum of four commercial CCS demonstrations including the Clean Coal Power Initiative (CCPI) and the Industrial CCS Demonstration projects (funded by both annual appropriations and the American Recovery and Reinvestment Act). Two of the four demonstrations to initiate operations by 2017 will be CCPI projects and two will be ICCS projects. This goal will be completed in FY 2017 and will no longer will be tracked in FY 2018 and beyond since this no longer aligns with the program's efforts focused on early stage R&D.						
Commentary on 2016 Results (Action Plan if Not Met)	In FY 2015 four projects initiated construction. One of the four was operational. The Annual Performance Measure for FY 2016 was to have three CCS projects in operation by the end of FY 2016. The Air Products project (FE0002381) is currently operational, capturing and sequestering carbon dioxide. **Action Plan:** Kemper, Petra Nova, and ADM are expected to reach operations in FY 2017.						
Documentation, Limitations, Methodology, Validation, and Verification	Air Products operational status is documented by an NETL News Release which reflects CO2 capture and storage figures officially reported by the Air Products project.						

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, natural gas carbon capture and advanced combustion capture applications.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target		< 55 $ per tonne CO2 captured	≤ 53 $ per tonne CO2 captured	51 $ per tonne of CO2 captured	49 $ per tonne of CO2 captured	47 $ per tonne CO2 captured	N/A: This goal is no longer relevant as the program is now focused on early-stage research for transformational energy conversion and capture technologies.
Result		**Met** - 53	**Met** - 53	**Met** - 50.9	**Met** - 49	TBD	N/A
Endpoint Target	Advanced Energy Systems with CO2 capture at no more than $40 per tonne of CO2 captured ready for demonstration by 2020 and less than $40 per tonne of CO2 captured ready for demonstration by 2030. This goal will no longer will be tracked in FY 2018 and beyond since this no longer aligns with the program's efforts focused on early stage R&D.						
Commentary on 2016 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 $40 per tonne of CO2 captured. R&D progress in post-combustion capture solvent development and the absorber/stripper process design provided the basis for the FY 2016 independent assessment performed by the Mission Execution and Strategic Analysis (MESA) Team using its AspenPlus® systems simulation model and associated plant cost model.						
Documentation, Limitations, Methodology, Validation, and Verification	The analysis supporting the validation of the annual performance measure is documented in the FY 2016 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 and safely store carbon dioxide.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	3 MMTs injected (since 2009)	4 MMTs injected (since 2009)	5 MMTs injected (since 2009)	6 MMTs injected (since 2009)	7 MMTs injected (since 2009)	8 MMTs injected (since 2009)	N/A: The Regional Carbon Sequestration Partnerships (RCSPs) will be terminated starting in 2018 and therefore this goal is no longer relevant since the injection operations at these projects will cease. The RCSP activities do not align with the program's focus on early-stage R&D.
Result	**Met** - 3.6	**Met** - 4.7	**Met** - 7.6	**Met** - 11.2	**Met** - 13.2	TBD	N/A
Endpoint Target	Inject 9.0 million metric tons of CO2 between January 2009 and 2020 in large-volume field test sites representing different storage classes to demonstrate and monitor for the formations' capacity to permanently and safely store carbon dioxide. A long-term goal is to ensure the cost-effective ability to measure and account for the injected CO2 to ensure 99 percent storage permanence in all storage types while minimizing the environmental footprint of carbon storage activities. This program goal is no longer relevant as the program has shifted to early-stage R&D and the RCSP will be terminated starting in 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	The performance measure for 2016 has been met with 13,167,129 metric tons of CO2 injected at large-volume field projects conducted by the Southeast Regional Carbon Sequestration Partnership (SECARB), the Midwest Carbon Sequestration Consortium (MGSC), the Midwest Regional Carbon Sequestration Partnership (MRCSP), the Southwest Regional Carbon Sequestration Partnership (SWP), and the Plains CO2 Reduction (PCOR) Partnership.						
Documentation, Limitations, Methodology, Validation, and Verification	SECARB (DE-FC26-05NT42590): The SECARB Principal Investigator provided a memo to the NETL project manager which documents the total injection volumes of 4,858,002 metric tons of CO2. MGSC (DE-FC26-05NT42588): This project ceased injection as of November 26, 2014. The final injected volume of 999,215 metric tons was reported in the MGSC Quarterly Progress Report (period of September 18, 2014-December 17, 2014) on pages 3 and 24. MRCSP						

	(DE-FC26-05NT42589): MRCSP typically reports injection volumes obtained from the field on a monthly basis. Quarterly progress reports also provide injection amounts, and the MRCSP quarterly progress report for the period ending September 30, 2016 stated the injection volumes to date was 1,519,090 metric tons. SWP (DE-FC26-05NT42591): For SWP, a total of 927,235 metric tons of anthropogenic CO2 was injected in the Morrow sandstone as of September 30, 2016. PCOR (DE-FC26-05NT42592): The PCOR Partnership project injected 4,863,587 metric tons of CO2 into the Muddy Sandstone as of March 31, 2016. The injection continued at the Bell Creek site for EOR operations; however, the RCSP project officially entered its post-injection monitoring period on March 31, 2016, so the injection total of 4,863,587 metric tons represents the final injected amount.

Program	Fossil Energy R&D						
Performance Goal (Measure)	**Cost of Energy and CO2 Capture from Advanced Power Systems** - Develop cost-effective, efficient, and reliable CO2 separation technologies and energy conversion technologies that inherently capture CO2, for both new and existing coal-fired power plants.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						N/A	Identify material properties to meet transformational goals
Result						N/A	TBD
Endpoint Target	By 2030, R&D technologies are available to support a new coal-fired power plant with CO2 capture with a cost of electricity at least 30% lower than a supercritical PC with CO2 capture, or approximately $30 per tonne of CO2 captured. By 2030, for retrofitting an existing coal-fired power plant with CO2 capture, capture technologies are available to reduce the cost of capture by 30% (actual cost of capture varies for each unit). (Baseline: NETL Cost and Performance Baseline Series; 2012 Capture Technology)						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Fossil Energy R&D
Performance Goal (Measure)	**Power Plant Efficiency Improvements** - Develop cost-effective, reliable technologies to improve the efficiency of new and existing coal-fired power plants.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target						N/A	Complete Efficiency Improvement Roadmap to 2030
Result						N/A	TBD
Endpoint Target	TBD. Will be informed by road mapping process proposed in FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Petroleum Reserves

Program	Petroleum Reserves						
Performance Goal (Measure)	**Drawdown Readiness** - Ensure drawdown readiness by achieving equal to or greater than 95% of monthly maintenance and accessibility goals.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
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	95 % of monthly maintenance and accessibility goals achieved	95 % of monthly maintenance achieved
Result	**Met** - 95.98	**Met** - 96.45	**Met** - 96.8	**Met** - 97.6	**Met** - 98.1	TBD	TBD
Endpoint Target	Achieve 95% of monthly maintenance and accessibility goals in all years.						
Commentary on 2016 Results (Action Plan if Not Met)	Drawdown readiness achieved at 98.1% of monthly maintenance and accessibility goals.						
Documentation, Limitations, Methodology, Validation, and Verification	Data is downloaded and collected monthly through SAP (company name) Plant Maintenance System. Analysis reports are generated from these data, and reviewed by Federal staff on monthly basis. Maintenance Performance Appraisal Report (MPAR) scores and narratives are updated and published in PBViews, the official SPR performance measure repository. The data are also reviewed during quarterly Program Reviews conducted between Federal headquarters staff, M&O contractor staff, and Federal field office staff.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≤ 0.225 $ operating cost per barrel	≤ 0.25 $ operating cost per barrel	≤ 0.25 $ operating cost per barrel	≤ 0.25 $ operating cost per barrel	≤ 0.3 $ operating cost per barrel	≤ 0.3 $ operating cost per barrel	≤ 0.23 $ operating cost per barrel
Result	**Met** - 0.221	**Met** - 0.239	**Met** - 0.239	**Met** - 0.233	**Met** - 0.25	TBD	TBD
Endpoint Target	Achieve ≤ $ 0.30 operating cost per barrel.						
Commentary on 2016 Results (Action Plan if Not Met)	The per barrel operating cost increased because storage capacity decreased from 727 million barrels to 713.5 million barrels and total operating costs will not decline as a result of the decreased storage capacity.						
Documentation, Limitations, Methodology, Validation, and Verification	Cost data is collected through DOE STARS reports and compiled by Federal field office staff. The data are reviewed during quarterly Program Reviews conducted between Federal headquarters staff, M&O contractor staff, and Federal field office staff.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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	4.22 MMB/Day drawdown readiness rate	4.2 MMB/Day drawdown readiness rate	4.16 MMB/Day drawdown readiness rate
Result	**Not Met** - 4.25	**Met** - 4.25	**Met** - 4.25	**Met** - 4.25	**Not Met** - 4.1	TBD	TBD
Endpoint Target	Maintain a 90 day drawdown rate of 4.4 million barrels per day						
Commentary on 2016 Results (Action Plan if Not Met)	N/A **Action Plan:** The 12-month average fell below the target due to a transformer malfunction at the Bryan Mound site, which negatively impacted that site's drawdown readiness for more than half of the month of September. The issues with the transformer have been resolved, so no additional Action Plan is necessary.						
Documentation, Limitations, Methodology, Validation, and Verification	Data are collected and reviewed through site visits and Readiness and Capability Reports (RECAP reports) that are produced quarterly. The data are also reviewed during quarterly Program Reviews conducted between Federal headquarters staff, M&O contractor staff, and Federal field office staff.						

Nuclear Energy

New Nuclear Generation Technologies

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	90 % of annual program milestones met	90 % of annual program milestones met	90 % of annual program milestones met	90 % of annual program milestones met	90 % of annual program milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 90	**Met** - 100	**Not Met** - 88	**Met** - 91	**Met** - 94	TBD	TBD
Endpoint Target	Advanced Reactor Technologies (ART) performance endpoints range from the mid-term (2030s) to very long term. ART 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 2016 Results (Action Plan if Not Met)	Overall, completion of milestones has furthered the development of advanced reactor designs including the sodium fast reactor, high temperature gas-cooled reactor, and fluoride salt-cooled high temperature reactor which is a type of molten salt reactor. This helps us meet our long term mission to have at least two advanced reactor concepts ready to be built in the 2030's.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo with milestone chart; completed milestones are documented in PICS-NE system.						

Program	New Nuclear Generation Technologies
Performance Goal (Measure)	**Fuel Cycle R&D (FCR&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	2012	2013	2014	2015	2016	2017	2018
Target	90 % of annual milestones completed	90 % of annual milestones met	90 % of annual milestones met	90 % of annual milestones met	90 % of annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 90	**Met** - 99	**Met** - 98	**Met** - 94	**Met** - 96	TBD	TBD
Endpoint Target	Perform long-term R&D on advanced technologies that could lead to the next generation of sustainable fuel cycle options that have the potential to improve resource utilization and energy generation, reduce waste generation, enhance safety, and limit proliferation risk.						
Commentary on 2016 Results (Action Plan if Not Met)	FCR&D completed 96% of its annual program milestones to support the long-term mission to develop options to the current commercial fuel cycle management strategy. Completed milestones of particular importance are: Advanced Fuels completed independent technical review of Accident Tolerant Fuels concepts and issued FUTURIX-FTA post irradiation examination report; Material Protection, Accounting and Control Technology completed the roadmap for dry storage safeguards and security by design; Used Nuclear Fuel Disposition completed the Deep Borehole Field Test Conceptual Design Report; and Integrated Waste and Management Systems issued a draft report on public feedback received during initial siting efforts.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo with milestone chart; Milestone completion documentation is located in the INL Document Management System (DMS).						

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**Light Water Reactor Sustainability (LWRS)** - Complete 90% of annual program milestones to support development of scientific knowledge to extend existing nuclear plant operating life beyond the current 60-year limit.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	90 % of annual milestones completed	90 % annual program milestones met	90 % annual program milestones met	90 % annual program milestones met	90 % annual program milestones met	90 % annual program milestones met	90 % annual milestones met
Result	**Met** - 100	**Met** - 96	**Met** - 100	**Met** - 100	**Met** - 100	TBD	TBD
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 2016 Results (Action Plan if Not Met)	The LWRS program made significant contributions to the long-term operation of the existing fleet. Research results on materials degradation issues, particularly related to concrete and cables, are being used by the nuclear industry to address long-term operations and licensing. Work on plant modernization through Instrumentation, Information and Controls (II&C) technologies is making good progress with the current use of advanced outage control technologies and with the design activities related to control room modernization pilot plants with two utilities. The Risk Informed Safety Margin Characterization (RISMC) research is beginning to be used to address current plant issues related to						

	high burnup fuel and external events. Finally, two utilities made announcements this year on their plans to submit second license renewal application to the Nuclear Regulatory Commission in late 2018 or early 2019.
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo; completed milestones are documented in the PICS-NE system.

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**NEET- Mod & Sim Hub** - Complete 90% of annual research and development milestones to support the wider applicability and deployment of virtual reactor modeling and simulation tools set for predictive simulation of Light Water Reactors by 2020.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	90 % of annual program milestones completed	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 95	**Met** - 91	**Met** - 100	**Met** - 100	**Met** - 100	TBD	TBD
Endpoint Target	These milestones represent annual progress toward virtual reactor modeling and simulation tools set for predictive simulation of Light Water Reactors by 2020.						
Commentary on 2016 Results (Action Plan if Not Met)	The Consortium for Advanced Simulation of Light Water Reactors (CASL) successfully completed all FY 2016 milestones. Over this past year, CASL has made significant advancements in their ability to simulate Light Water Reactors, making progress on the overall CASL objective of addressing reactor operational challenges through advanced modeling and simulation. Key examples include the simulation of the startup of unit 2 of the Watts Bar Nuclear Plant demonstrating good agreement with measured data as well as efforts to model several other nuclear plants. CASL also made progress in modeling nuclear fuels with the integration of the BISON fuel performance code, with the core simulator as part of CASL's Virtual Environment for reactor operations. Deployments of the Virtual Environment for Reactor Applications (VERA) for industry applications continued with CASL Test Stands at the University of Illinois for work supporting Exelon, AREVA, and plans for future work with NuScale. The CASL leadership also developed a Post-CASL strategy with a key element focused on a future integrated modeling and simulation program.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo; various CASL documents validating milestone completion.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	1 complete program milestones	1 complete program milestones	= 1 complete program milestones	= 1 complete program milestones	= 1 complete program milestones	= 1 complete program milestones	N/A
Result	**Not Met** - 0	**Met** - 1	**Not Met** - 0	**Met** - 1	**Met** - 1	TBD	N/A
Endpoint Target	Provide financial risk reduction to industry first-movers for the completion of design development, certification and licensing in a timeframe that supports SMR deployment in the early to mid-2020s.						
Commentary on 2016 Results (Action Plan if Not Met)	Completion of the selected FY16 performance measures/milestones is critically important to meeting the goal of the SMR Licensing Technical Support program, which is to accelerate the availability of clean, safe SMR technologies into the marketplace. By meeting these milestones, the overall program has been able to stay on track to providing a viable SMR design to customers that have plans to deploy SMRs on selected domestic sites by the mid-2020's.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo.						

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**Nuclear Waste Management** - Complete 90% of annual program milestones to restart licensing activities for the Yucca Mountain nuclear waste repository and initiate a robust interim storage program.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						N/A	90 % of annual milestones met
Result						N/A	TBD
Endpoint Target							
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Nuclear Infrastructure

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	80 % availability	80 % availability	80 % availability	80 % availability	80 % availability	80 % availability	80 % availability
Result	**Not Met** - 70.5	**Not Met** - 64.2	**Not Met** - 77	**Not Met** - 77	**Met** - 82.6	TBD	TBD
Endpoint Target	Maintain the percentage of facilities and capabilities that are available for research and development activities at 90% or better.						
Commentary on 2016 Results (Action Plan if Not Met)	Met. Facilities at Materials and Fuels Complex (MFC) and Advanced Test Reactor (ATR) were available for a combined cumulative average of 82.6% in FY 16. Individually, MFC facilities achieved 91% availability, and ATR facilities achieved 74.1%. The continued inability of ATR to meet at least 80% of scheduled operations extends the timeline of experiment programs. As the ATR approaches the Core-Internals-Changeout (CIC), the impact significantly increases due to the duration of CIC. Although the issues experienced this FY were equipment, it was not equipment associated with operation of the plant, but with experimental apparatus in the core. Continued focus on Equipment Reliability and Plant Health will drive ATR efficiency above 80%.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo; performance is documented via memo from Idaho Ops.						

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	2012	2013	2014	2015	2016	2017	2018
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	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15
Result	**Met** - 100	**Met** - 100	**Not Met** - 0.9	**Met** - 100	**Met** - 100	TBD	TBD
Endpoint Target	Maintain the total percentage of projects with good cost and schedule indexes at 90% or better.						
Commentary on 2016 Results (Action Plan if Not Met)	Currently, the Idaho Operations Office is tracking only one baselined project, the Remote-Handled Low-Level Waste Disposal Project. Approximately 78% of the project was completed by the end of the fiscal year and Battelle Energy Alliance (BEA) took a proactive management approach with Areva to maintain execution of construction activities close to the approved performance baseline. Although BEA had challenges managing the contract with Areva, the project's performance was sustained within the Department's established thresholds of +/- 10% for schedule and cost performance indexes. Since vault installation activities lie in the project's critical path schedule, the NE-ID and BEA will assess sequencing of scheduled activities in 2017 after corrective actions are fully implemented, to mitigate the schedule and cost impacts of the lifter failure event.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly performance certification memo; performance is documented via memo from Idaho Ops.						

Environmental Management

Nuclear Materials and Tank Waste

Program	Nuclear Materials and Tank Waste						
Performance Goal (Measure)	**Depleted and Other Uranium (DU&U) Packaged for Disposition** - A cumulative number of metric tons of DU and U packaged in a form suitable for disposition						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	37,046 metric tons	56,901 metric tons	= 68,730 metric tons	93,624 metric tons	97,256 metric tons	88,721 metric tons	113,721 metric tons
Result	**Not Met** - 26,281	**Not Met** - 46,030	**Not Met** - 68,624	**Not Met** - 79,232	**Not Met** - 80,221	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 838,031 metric tons.						
Commentary on 2016 Results (Action Plan if Not Met)	The two plants (one at Portsmouth Ohio, one at Paducah Kentucky) dedicated to the processing of depleted uranium hexafluoride and packaging the uranium oxide product have been offline throughout much of fiscal year (FY) 2016 due to equipment failures. These facilities are expected to resume operations some time in FY 2017. **Action Plan:** The Paducah plant has completed the Contractor Readiness Assessment. When approved, with an anticipated completion date of end of calendar year 2016, the Paducah plant is expected to resume operations. Resumption of operations of the Portsmouth plant are not expected until after the end of calendar year 2016. The Department is evaluating whether resumption of operations will occur after the transition to the new contractor is completed, which is expected in February 2017.						
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 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 Office of Project Management Oversight and Assessments. EM also maintains a variety of sources for validation and verification of specific results. For this metric results are provided in the Daily Production Reports of the Portsmouth and Paducah plants.						

Program	Nuclear Materials and Tank Waste
Performance Goal (Measure)	**Enriched Uranium Packaged** - A cumulative number of certified containers packaged and ready for long-term storage

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	8,016 containers	8,016 containers	8,016 containers	8,016 containers	8,016 containers	8,016 containers	8,016 containers
Result	**Met** - 8,016	**Met** - 8,016	**Met** - 8,016	**Met** - 8,016	**Met** - 8,016	TBD	TBD
Endpoint Target	This metric has a life cycle of 8,603 containers.						
Commentary on 2016 Results (Action Plan if Not Met)							
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 its performance metrics for this metric with the inspection records, shipping manifests and disposal records.						

Program	Nuclear Materials and Tank Waste						
Performance Goal (Measure)	**High Level Waste Packaged for Final Disposition** - A cumulative total of high level waste canisters packaged for disposition.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	3,801 containers of high level waste	4,077 canisters of high level waste	4,153 canisters of high level waste	4,405 canisters of high level waste	4,393 canisters of high level waste	4,426 canisters of high level waste	4,543 canisters of high level waste
Result	**Met** - 3,802	**Not Met** - 4,028	**Met** - 4,154	**Not Met** - 4,241	**Not Met** - 4,374	TBD	TBD
Endpoint Target	This measure has a life cycle estimate of 24,858 canisters.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM Program packaged a cumulative total of 4,374 High Level Waste (HLW) canisters at the end of FY 2016, 19 HLW canisters short of its target. This is due to two factors: the failure of the evaporator and a failure in a HLW tank cooling apparatus. These equipment failures prevented the effective processing of HLW in FY 2016. **Action Plan:** The EM Program will be working with the Defense Waste Processing Facility (DWPF) at the Savannah River Site (SRS) to repair the equipment as well as to bring the Salt Waste Processing Facility (SWPF) online in FY 2017 to ensure that the variance in FY 2016 is addressed and that more waste can be processed in FY 2017 and in future 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 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 shift reports from the DWPF as a source for validation and verification of specific results for this metric.

Program	Nuclear Materials and Tank Waste						
Performance Goal (Measure)	**Liquid Waste Eliminated** - A cumulative volume of radioactive liquid waste (including other forms such as sludge) eliminated from inventory.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	5,684 thousand gallons	6,993 thousand gallons	7,343 thousand gallons	7,592 thousand gallons	7,426 thousand gallons	7,684 thousand gallons	8,362 thousand gallons
Result	**Not Met** - 5,340	**Not Met** - 6,133	**Not Met** - 6,592	**Not Met** - 6,863	**Not Met** - 7,342	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 102,045 thousands of gallons.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM Program eliminated a cumulative total of 7,342 thousand gallons of liquid waste at the end of FY 2016, 84 thousand gallons short of its target. This is due to two factors: the failure of the evaporator and a failure in a High Level Waste (HLW) tank cooling apparatus. These equipment failures prevented the effective processing of HLW (including the elimination of liquid waste) in FY 2016. **Action Plan:** The EM Program will be working with the Savannah River Site to repair the equipment as well as to bring the Salt Waste Processing Facility online in FY 2017 to ensure that the variance in FY 2016 is addressed and that more waste can be processed in FY 2017 and in future 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 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. Also, for this specific metric, the EM Program uses the Quality Assurance Inspection Records for waste packaging to validate and verify program performance.						

Program	Nuclear Materials and Tank Waste
Performance Goal (Measure)	**Liquid Waste Tanks Closed** - A cumulative total of liquid waste tanks closed.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	15 tanks closed	11 tanks closed	13 tanks closed	15 tanks closed	15 tanks closed	15 tanks closed	15 tanks closed
Result	**Not Met** - 11	**Met** - 11	**Met** - 13	**Not Met** - 14	**Met** - 15	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 239 tanks closed.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM Program completed a cumulative total of 15 liquid waste tanks through the end of FY 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 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. Also, for this specific metric, verification of completion of the tank closure corporate performance metric may be demonstrated through the site's satisfactory compliance with the State's permit requirements for the tank once filled with grout.						

Program	Nuclear Materials and Tank Waste						
Performance Goal (Measure)	**Material Access Areas Eliminated** - A cumulative number of Material Access Areas, (i.e., a high security location which contains special nuclear material) closed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	31 MAAs eliminated	30 MAAs eliminated	30 MAAs eliminated	30 Number of Material Access Areas	34 Material Access Areas Eliminated	30 Material Access Areas Eliminated	30 Material Access Areas Eliminated
Result	**Not Met** - 30	**Met** - 30	**Met** - 30	**Met** - 30	**Not Met** - 30	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 35 Material Access Areas eliminated.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM Program did not meet its target for FY 2016 this is due to work required at the Hanford site. **Action Plan:** The Hanford site had moved the target for the remaining work through the change control process.						
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 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	Nuclear Materials and Tank Waste						
Performance Goal (Measure)	**Spent Nuclear Fuel Packaged for Final Disposition** - A cumulative total of heavy metal mass of spent nuclear fuel packaged and ready for final disposition.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	2,128 metric tons of heavy metal	2,128 metric tons of heavy metal	2,128 metric tons of heavy metal	2,130 metric tons of heavy metal	2,130 metric tons of heavy metal	2,131 metric tons of heavy metal	2,132 metric tons of heavy metal
Result	**Met** - 2,128	**Met** - 2,128	**Met** - 2,130	**Met** - 2,130	**Met** - 2,130	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 2,452 metric tons of heavy metal.						
Commentary on 2016 Results (Action Plan if Not Met)							
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 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.						

Waste Management

Program	Waste Management						
Performance Goal (Measure)	**Legacy and Newly Generated LLW and Mixed LLW Disposed** - The cumulative amount of legacy and newly generated low-level and mixed low-level waste disposed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	1,224,799 cubic meters	1,253,146 cubic meters	1,298,854 cubic meters	1,305,096 cubic meters	1,337,349 cubic meters	1,340,981 cubic meters	1,354,278 cubic meters
Result	**Met** - 1,226,504	**Met** - 1,265,992	**Not Met** - 1,292,571	**Met** - 1,315,101	**Not Met** - 1,330,550	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 1,589,543 cubic meters disposed.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM program disposed of a cumulative total of 1,330,550 cubic meters of legacy and newly generated low-level and mixed low-level waste, 6,799 cubic meters short of its target for FY 2016. This is due to shortfalls for this metric at the Office of River Protection (ORP). The Tank Farms at ORP are working under a court order that was issued in July. All work within Tank Farms now requires the use of Self-Contained Breathing Apparatus (SCBA) and all waste disturbing activities have been put on hold, resulting in a significant waste disposal variance.						

	Action Plan: The EM Program will be working with ORP to address appropriate future targets for this metric in the coming years. After a court ruling is finalized, ORP will be able to provide further information on potential variance recovery.
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 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. For this specific metric the EM Program uses shipping manifests for the transport of waste to verify and validate this metric.

Program	Waste Management						
Performance Goal (Measure)	**Transuranic Waste Dispositioned** - A cumulative total of cubic meters of transuranic (TRU) waste (consisting of Remote Handled TRU and Contact Handled TRU) dispositioned.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	80,502 cubic meters	97,858 cubic meters	= 102,591 cubic meters	102,591 cubic meters	102,026 cubic meters	103,750 cubic meters	104,750 cubic meters
Result	**Exceeded** - 81,138	**Not Met** - 96,016	**Not Met** - 99,179	**Not Met** - 102,026	**Met** - 103,442	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 151,748 cubic meters						
Commentary on 2016 Results (Action Plan if Not Met)	Waste emplace activities and shipments will resume in 2017. Low and mixed low level waste is identified and separated during TRU waste retrieval, treatment and characterization activities. This waste is counted under this goal due to its inclusion in the total life cycle estimate of 151,748 cubic meters.						
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 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. For this specific metric the EM Program uses shipping manifests for the transport of waste to verify and validate this metric.						

Site Restoration

Program	Site Restoration						
Performance Goal (Measure)	**Geographic Sites Completed** - A cumulative number of sites completed. A site in its entirety is complete when active remediation has been completed in accordance with the terms and conditions of cleanup agreements (e.g., records of decision and permits). Stewardship or non-EM activities may be ongoing after site completion.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	91 sites	90 sites	91 sites	91 sites	91 sites	91 sites	91 sites
Result	**Not Met** - 90	**Met** - 90	**Met** - 91	**Met** - 91	**Met** - 91	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 107 geographic sites.						
Commentary on 2016 Results (Action Plan if Not Met)							
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, and the Defense Nuclear Facilities Safety Board. For this specific metric the EM program uses documents regarding the transfer of the targeted site to the appropriate Program Secretarial Office (e.g., Office of Science, Office of Nuclear Energy, Office of Legacy Management, etc.)						

Program	Site Restoration						
Performance Goal (Measure)	**Industrial Facilities Completed** - A cumulative number of industrial facilities completed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	1,900 facilities completed	1,961 facilities	2,070 facilities	2,107 facilities	2,119 facilities	2,162 facilities	2,206 facilities
Result	**Not Met** - 1,895	**Met** - 2,128	**Met** - 2,095	**Met** - 2,109	**Met** - 2,144	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 4,243 facilities.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM program met its target for this metric for FY 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. EM maintains a variety of sources for validation and						

	verification for this metric, i.e.: Decommissioning Project Final Reports, as well as State and Federal regulator acceptance of completion report.

Program	Site Restoration						
Performance Goal (Measure)	**Nuclear Facilities Completed** - A cumulative number of nuclear facilities completed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	130 facilities	131 facilities	138 facilities	153 facilities	160 facilities	157 facilities	158 facilities
Result	**Not Met** - 128	**Met** - 131	**Met** - 146	**Not Met** - 151	**Not Met** - 151	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 488 facilities.						
Commentary on 2016 Results (Action Plan if Not Met)	In FY 2016 the EM Program completed a cumulative total of 160 nuclear facilities, nine nuclear facilities short of its target. This was due, in part, to shortfalls at the Richland site involving the completion of facilities at the Plutonium Finishing Plant. **Action Plan:** The contractor for the Plutonium Finishing Plant is completing the final steps of its independent demolition readiness assessment (RA Level II-Contractor approval with DOE observation) that was completed on September 30, 2016. Depending on the extent of any needed demolition prestart corrective actions identified by the Contractor's RA team, demolition of 236-Z is scheduled to commence early in FY 2017.						
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 maintains a variety of sources for validation and verification of specific results for this metric, i.e. Decommissioning Project Final Report, as well as State and Federal regulator acceptance of completion report.						

Program	Site Restoration						
Performance Goal (Measure)	**Radioactive Facilities Completed** - A cumulative number of radioactive facilities completed.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	525 radioactive facilities	534 facilities	561 facilities	563 facilities	581 facilities	577 facilities	587 facilities
Result	**Not Met** - 408	**Met** - 555	**Met** - 561	**Met** - 565	**Not Met** - 567	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 961 facilities.						

Commentary on 2016 Results (Action Plan if Not Met)	The EM Program completed a cumulative total of 567 radioactive facilities through the end of FY 2016, 14 facilities short of its target. This was largely due to shortfalls of activities at the Richland site involving the completion of facilities at the Plutonium Finishing Plant (PFP). **Action Plan:** The contractor for the PFP is scheduled to commence demolition of the nuclear facilities early in FY 2017. Demolition of the remaining radioactive facilities of the PFP is expected to be completed by the end of FY 2017.
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 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 maintains a variety of sources for validation and verification of specific results for this metric, i.e. Decommissioning Project Final Report, as well as State and Federal regulator acceptance of completion report.

Program	Site Restoration						
Performance Goal (Measure)	**Remediation Completed** - Remediation work at a cumulative total of release sites completed. A release site is considered complete after regulatory approval is obtained and no additional EM resources are required except for long-term stewardship.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	7,361 release sites	7,627 release sites	8,035 release sites	8,201 release sites	8,340 release sites	8,205 release sites	8,294 release sites
Result	**Met** - 7,496	**Met** - 7,849	**Not Met** - 7,945	**Not Met** - 8,047	**Not Met** - 8,159	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 11,666 release sites.						
Commentary on 2016 Results (Action Plan if Not Met)	The EM Program completed 8,159 release sites through FY 2016, 181 release sites short of its target. This was largely due to outstanding remediation work required at the Los Alamos National Laboratory (LANL). **Action Plan:** LANL has a new consent decree governing clean-up work. Work activities are being aligned with the new decree. This metric will be revised once the alignment is completed.						
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: State and federal regulator acceptance of the Remedial Action Report.						

Legacy Management

Legacy Management

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	= 87 activities	= 89 activities	= 89 sites	= 90 sites	= 90 sites	= 93 Sites	= 97 Sites
Result	**Met** - 87	**Met** - 89	**Met** - 89	**Met** - 90	**Met** - 91	TBD	TBD
Endpoint Target	Continued inspections on all sites until risk has been reduced to the point that further inspections are not needed.						
Commentary on 2016 Results (Action Plan if Not Met)	Due to schedule issues, anticipated sites expected for transition did not materialize.						
Documentation, Limitations, Methodology, Validation, and Verification	LM Blue Book						

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	2012	2013	2014	2015	2016	2017	2018
Target	4 percent reduction below the baseline	2 percent reduction	2 percent reduction	≥ 2 percent reduction	≥ 2 percent reduction	≥ 2 percent reduction	≥ 2 Percent Reduction
Result	**Met** - 11.4	**Met** - 11.8	**Exceeded** - 7.9	**Met** - 2	**Met** - 14.4	TBD	TBD
Endpoint Target	Achieve a 2 percent reduction below the baseline each year.						
Commentary on 2016 Results (Action Plan if Not Met)	LM Exceeded its Post-Appropriation Target.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly Post-Competition Accountability Report (PCAR) Submittals						

Office of Science

Advanced Scientific Computing Research

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Availability was 99% for the year						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly and EOY: The data comes directly from the batch queue accounting system at the National Energy Research Scientific Computing (NERSC) facility, Oak Ridge Leadership Computing Facility (OLCF), and Argonne Leadership Computing Facility (ALCF). The number of unavailable CPU hours are 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	2012	2013	2014	2015	2016	2017	2018
Target	Develop exascale plan coordinated with NNSA and socialized with the community and policy makers	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.	Fund two teams to develop exascale node designs.	Identify at least one multi-institutional team to develop new mathematics for DOE mission focused grand challenges at the nexus of multiple computational sub-domains such as data-driven discovery, multiscale modeling, uncertainty quantification, and adaptive algorithms.	Support at least two machines learning efforts in both applied mathematics and computer science.
Result	**Not Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	Develop and deploy high-performance computing hardware and software systems through exascale platforms						
Commentary on 2016 Results (Action Plan if Not Met)	All of the Exascale Computing Project (ECP) PathForward Technical Representatives have been given the green light to formally begin Statement of Work negotiations with our selected PathForward vendors. There are six vendors that have been selected for negotiations. Of these, four vendors are focused on node designs, three of the six also have significant system design efforts.						
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 the Portfolio Analysis and Management System (PAMS).						

Basic Energy Sciences

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Cost variance 6.0% and schedule variance 4.4%.						
Documentation, Limitations, Methodology, Validation, and Verification	BES Projects include those that have an approved performance baseline at the start of FY 2016, which include: NEXT. Supporting data reside in the DOE Office of Project Management Oversight and Assessment's Project Assessment and Reporting System-II (PARS-II) and with Basic Energy Science's Division of Scientific User Facilities (SC-22.3). The EOY report is based on PARS-II data through the end of August.						

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	2012	2013	2014	2015	2016	2017	2018
Target				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.	Complete self-consistent system analyses using techno-economic modeling of three electrochemical couples, identified through materials discovery including output from the electrolyte genome, that have the potential to meet technical performance and cost criteria.	Develop and demonstrate energy storage research prototypes that are scalable for transportation and grid applications using concepts beyond lithium ion (multivalent ions, chemical transformation, and non-aqueous redox flow), as identified through materials discovery and techno-economic modeling.	N/A
Result				**Met**	**Met**	TBD	TBD
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 the Joint Center for Energy Storage Research's (JCESR) 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 2016 Results (Action Plan if Not Met)	The Dashboard tool has been completed, connecting the Electrolyte Genome to the techno-economic analysis for three electrochemical couples that have the potential to meet technical performance and cost criteria.						
Documentation, Limitations, Methodology, Validation, and Verification	The DOE Energy Innovation Hub for Batteries and Energy Storage - Joint Center for Energy Storage Research (JCESR) - 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 is 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	BES user facilities achieved a total of 32,614 hours which is 101% of the planned operating time of 32,190 hours.						
Documentation, Limitations, Methodology, Validation, and Verification	Supporting documents consist of the required quarterly and annual reports submitted to BES by the BES user facilities at the completion of each quarter and at the end of the fiscal year. These final reports reside in the files of the Office of Basic Energy Sciences (SC-22). The total planned operating hours for this goal is obtained from the planned operating hours of these individual user facilities in FY16: National Synchrotron Light Source II (NSLS-II) 3,740; Stanford Synchrotron Radiation Lightsource (SSRL) 5,000; Advanced Light Source (ALS) 4,550; Advanced Photon Source (APS) 5,000; Linac Coherent Light Source (LCLS) 5,500; High Flux Isotope Reactor (HFIR) 3,700; and Spallation Neutron Source (SNS) 4,700 for a total of 32,190 hours (28,971 hours is 90%).						

Program	Basic Energy Sciences
Performance Goal (Measure)	**BES Research** - Conduct discovery-focused research to increase our understanding of matter, materials and their properties

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target						N/A	Expand computational materials and chemical discovery through increased data production and additional online computational resources: add elastic and electronic properties data for 5000 compounds and 5,000 reaction energies for catalytic reactions to publicly available databases; add new or expanded functionality to on-line, high performance computer software/codes for prediction of materials properties.
Result						N/A	TBD
Endpoint Target	Understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels						

Commentary on 2016 Results (Action Plan if Not Met)	
Documentation, Limitations, Methodology, Validation, and Verification	

Biological and Environmental Research

Program	Biological and Environmental Research						
Performance Goal (Measure)	**BER Earth System Model** - Develop a coupled earth system model with fully interactive water, carbon and sulfur cycles, as well as dynamic vegetation to enable simulations of earth system responses to change.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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.	Develop and apply a fully coupled ice-sheet model to estimate near-term changes to the West Antarctic ice sheet.	Extend the capabilities of the DOE's high-resolution Earth System Model to simulate and evaluate human-natural interdependencies for the carbon and water cycles.	Demonstrate improved ocean model simulations with the new high-resolution MPAS-Ocean.
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	BER supports the leading U.S. high-resolution earth system model, and addresses two of the most critical areas of uncertainty in contemporary earth system science—the impacts of clouds and aerosols that combine with biogeochemical and cryospheric processes. Delivery of improved scientific data and models (with quantified uncertainties) about the earth's atmospheric, oceanic, cryospheric, and terrestrial system to more accurately predict the earth system responses to change. The information is essential to plan for future national security, energy and infrastructure needs, water resources, and land use. DOE will continue to advance the science necessary to further develop predictive earth system models at the regional spatial scale and multiple time scales, involving close coordination with the U.S. and international science community.						
Commentary on 2016 Results (Action Plan if Not Met)	The DOE Accelerated Climate Model for Energy (ACME), model now includes coupled processes for ice-sheets and other components to enable investigation of sea level change. Metric reports are posted here: http://climatemodeling.science.energy.gov/about/fy-2016-performance-metrics						

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://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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				Develop one new computationally enabled approach to analyze complex genomic datasets.	Develop an improved metabolic engineering method for modifying microorganisms for biofuel production from cellulosic sugars.	Develop improved open access platforms for computational analysis of large genomic datasets.	Using genomics-based techniques, develop an approach to explore the functioning of plant-microbe interactions.
Result				**Met**	**Met**	TBD	TBD
Endpoint Target	BER will advance understanding of the operating principles and functional properties of plants, microbes, and complex biological communities relevant to DOE missions in energy and the environment. 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 biotechnology and predict impacts of changing environmental conditions on carbon cycling and other biogeochemical processes.						
Commentary on 2016 Results (Action Plan if Not Met)	Latest developments on improved metabolic engineering techniques used to produce biofuels from cellulosic sugars are summarized in a report located at: http://www.jbei.org/wp-content/uploads/2016/09/Final-Q4-Summary-Report-v5.pdf.						
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://jbei.org

Fusion Energy Sciences

Program	Fusion Energy Sciences						
Performance Goal (Measure)	**FES Facility Based Experiments** - Experiments conducted on major fusion facilities [DIII-D National Fusion Facility (DIII-D) and National Spherical Torus Experiment Upgrade (NSTX)-U] leading toward predictive capability for burning plasmas and configuration optimization						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	Conduct experiments and analysis on major fusion facilities leading toward 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,	Conduct experiments and analysis to explore enhanced confinement regimes 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	Conduct experiments and analysis to investigate and quantify plasma 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.	Conduct experiments and analysis to quantify the impact of broadened current 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	Conduct research to detect and minimize the consequences of disruptions in present and future tokamaks. Coordinated research will deploy a disruption prediction/warning algorithm on existing tokamaks, assess approaches to avoid disruptions, and quantify plasma and radiation asymmetries resulting from disruption mitigation measures,	Conduct research to examine the effect of configuration on operating space for dissipative divertors. Handling plasma power and particle exhaust in the divertor region is a critical issue for future burning plasma devices. The very narrow edge power exhaust channel projected for tokamak devices that operate at high poloidal magnetic field is of particular	Conduct research to test predictive models of fast ion transport by multiple Alfvén eigenmodes. Fusion alphas and injected energetic neutral particle beams provide an important source of heating and current drive in advanced tokamak operating scenarios and burning plasma regimes. Alfvén eigenmode instabilities can cause the redistribution or loss of fast ions and driven

	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 significant excitation of electron modes. Along with new experiments, work will include analysis of relevant previously-collected data	tools of the devices, joint teams will work to strengthen the basis for extrapolation of these regimes to ITER and other future fusion devices.	Dependence of response to multiple plasma parameters will be explored in order to gain confidence in predictive capability of the models.	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.	including both preexisting and resulting MHD activity, as well as the localized nature of the disruption mitigation system. The research will employ new disruption mitigation systems, control algorithms, and hardware to help avoid disruptions, along with measurements to detect disruption precursors and quantify the effects of disruptions.	concern. Increased and controlled divertor radiation, coupled with optimization of the divertor configuration, are envisioned as the leading approaches to reducing peak heat flux on the divertor targets and increasing the operating window for dissipative divertors. Data obtained from DIII-D and NSTX-U and archived from Alcator C-Mod will be used to assess the impact of edge magnetic configurations and divertor geometries on dissipative regimes, as well as their effect on the width of the power exhaust channel, thus providing	currents, as well as potentially decreasing fusion performance and leading to localized losses. Measured fast ion fluxes in DIII-D and NSTX-U plasmas with different levels of Alfvén eigenmode activity will be used to determine the threshold for significant fast ion transport, assess mechanisms and models for such transport, and quantify the impact on beam power deposition and current drive. Measurements will be compared with theoretical predictions, including quantitative fluctuation 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.					essential data to test and validate leading boundary plasma models.	and fast ion density, in order to validate models and improve understanding of underlying mechanisms. Model predictions will guide the development of attractive operating regimes.
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 future burning plasma devices and, ultimately, in power plants.						
Commentary on 2016 Results (Action Plan if Not Met)	Research to detect and minimize the consequences of disruptions in tokamaks was conducted at all three facilities and a final joint report was prepared. Results of experiments on mitigating disruptions with massive gas injection into plasmas with existing magnetohydrodynamic modes was summarized and the application of a disruption prediction code on NSTX and National Spherical Torus Experiment Upgrade (NSTX-U) data was described. Potential disruption precursors were evaluated using multiple machine databases and DIII-D experiments explored ways to reduce disruptions through active control of plasma stability. Experiments on runaway electron physics were conducted on DIII-D and Alcator C-Mod, and new diagnostics were deployed on DIII-D.						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Met**	**Met**	**Met**	**Not Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Achieved 1,650 hours which is 111% of the planned operating time of 1,480 hours.						
Documentation, Limitations, Methodology, Validation, and Verification	V&V data are contained in progress reports maintained by the FES program office. FES's major national fusion facilities are: - 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 (160 hours of operations are planned for Alcator C-Mod); - the National Spherical Torus Experiment-Upgrade at the Princeton Plasma Physics Laboratory (720 hours of operations are planned for NSTX-U). 1,480 hours total (baseline) are expected for FY16.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	Improve our understanding of the effects of relatively small nonaxisymmetric fields in tokamak equilibria, with a focus on effects that are of	Carry out advanced simulations to address two of the most problematic consequences of major disruptions in	Understanding alpha particle confinement in ITER, the world's first burning plasma experiment, is a key priority for the fusion	Perform massively parallel plasma turbulence simulations to determine expected transport in ITER. Starting	Predicting the magnitude and scaling of the divertor heat load width in magnetically confined burning plasmas is a	Lower hybrid current drive (LHCD) will be indispensable for driving off-axis current during long-pulse operation of future burning	The interaction of the boundary plasma with the material surfaces in magnetically confined plasmas is

	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.	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.	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.	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.	high priority for the fusion program. One of the key unresolved physics issues is what sets the heat flux width at the entrance to the divertor region. Perform massively parallel simulations using 3D edge kinetic and fluid codes to determine the parameter dependence of the heat load width at the divertor entrance and compute the divertor plate heat flux applicable to moderate particle recycling conditions. Comparisons will be made with data from DIIID, NSTX-U, and C-Mod.	plasma experiments, since it offers important leverage for controlling damaging transients caused by magnetohydrodynamic instabilities. However, the experimentally demonstrated high efficiency of LHCD is incompletely understood. In FY 2017, massively parallel, high-resolution simulations with 480 radial elements and 4095 poloidal modes will be performed using full-wave radiofrequency field solvers and particle Fokker-Planck codes to elucidate the roles of toroidicity and full-wave effects. The simulation predictions will	among the most critical problems in fusion energy science. In FY 2018, perform high-performance computational simulations with coupled boundary plasma physics and materials surface models to predict the fuel recycling and tritium retention of the divertor for deuterium-tritium burning plasma conditions, accounting for erosion, re-deposition and impurity transport in the plasma boundary, and an initial evaluation of the influence of material deposition on the recycling and retention.

						be compared with experimental data from the superconducting EAST tokamak.	
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 Office of 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 2016 Results (Action Plan if Not Met)	The massively parallel simulation results from two high-fidelity plasma edge turbulence codes agree with experimental observations from today's tokamaks, while being more optimistic (compared with predictions from lower-fidelity models) about the heat-flux width in future fusion reactors. This work increased the confidence of the fusion community in its ability to predict the magnitude and scaling of the divertor heat-flux width in tokamak devices.						
Documentation, Limitations, Methodology, Validation, and Verification	V&V data are contained in progress reports maintained by the FES program office.						

High Energy Physics

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	Cost weighted mean cost variance is 2% and cost weighted schedule variance is 4%						
Documentation, Limitations, Methodology, Validation, and Verification	Derived from Quarterly Project Reports for the following projects: 1. Large Hadron Collider (LHC) ATLAS (A Toroidal LHC Apparatus) Detector Upgrade 2. LHC CMS (Compact Muon Solenoid) Detector Upgrade						

	3. Large Synoptic Survey Telescope (LSST) Project 4. Muon to Electron Conversion Experiment (Mu2e) 5. Muon g-2 (anomalous magnetic moment) Experiment 6. Dark Energy Spectroscopic Instrument (DESI) Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project. The EOY report is based on PARS II data through the end of August. The supporting documentation resides in the files of the HEP Office (SC-25).

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %
Result	**Met**	**Not Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	HEP facilities achieved 10,242 hours which is 102% of the scheduled 10,085 hours.						
Documentation, Limitations, Methodology, Validation, and Verification	Derived from letters from Lab Directors or designee. Fermi data are reported at http://www-bdnew.fnal.gov/operations/lum/supertable.html. The scientific user facilities and scheduled hours: - Total hours scheduled is 9,939 hours (7,951 hours is 80%). - FACET (Facility for Advanced Accelerator Experimental Tests) is scheduled for 3096 hours during Q1, Q2 and Q3 (2477 hours is 80%). - Fermilab Accelerator Complex is scheduled to run 4800 hours in FY 2016 (3840 is 80%). - Brookhaven ATF is scheduled to run 2,043 hours in FY 2016 (1634 is 80%). Unscheduled downtime reported by each facility is averaged, weighted by the Facility Operations cost. Facility Operations costs are defined in the Facilities Summary section of the HEP budget submission.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	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.	Physics analyses results from data taking will be presented by the NOvA and MicroBooNE experimental collaborations at the FY 2016 summer conferences.	Fermilab switches operations mode over from neutrino beam to antineutrino beam delivery to the NOvA experiment. NOvA accumulates physics data in antineutrino mode.	MicroBooNE data taking will complete final year of phase-1. NOvA will publish the first muon and electron anti-neutrino oscillation results. ICARUS data taking will begin. SBND physics commissioning will continue.
Result		**Met**	**Met**	**Not Met**	**Met**	TBD	TBD
Endpoint Target	Similar to quarks, the mixing between neutrinos is postulated to 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 2016 Results (Action Plan if Not Met)	NOvA (Neutrinos at the Main Injector Off-Axis Appearance) has published results on muon/tau neutrino mixing showing that it is not maximal at the 2.5 sigma level. There is a new, more efficient electron neutrino oscillation result, and NOvA presented their first sterile neutrino oscillation result. MicroBooNE collected a total of 3.57x10^20 protons on target with >95% detector uptime during the period from October 2015 to the start of the Fermilab accelerator shutdown in July 2016. Both experiments presented results at Neutrino 2016 and the International Conference of High Energy Physics.						
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).

Nuclear Physics

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	12 GeV CEBAF project cost variance was 3% and schedule variance was 1%.						
Documentation, Limitations, Methodology, Validation, and Verification	Derived from the Monthly Report preceding the end of the quarter for the following projects: - 12 GeV CEBAF (Continuous Electron Beam Accelerator Facility) Upgrade Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project. The EOY report is based on PARS II data through the end of August. The supporting documentation resides in the files of the ONP (SC-26).						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	NP user facilities operated 8,858 hours, 105% of the planned operating hours of 8,408 hours.						
Documentation, Limitations, Methodology, Validation, and Verification	The total planned operating hours for ATLAS (Argonne Tandem-Linac Accelerator System) and RHIC (Relativistic Heavy Ion Collider) is 8,408 hours (80% is 6,726 hours). 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. 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. Documentation resides in the Office of Nuclear Physics (SC-26) files. This target is met when the total operating time is 80% or greater.						

Program	Nuclear Physics
Performance Goal (Measure)	**NP Nuclear Structure** - Conduct fundamental research to discover, explore, and understand all forms of nuclear matter.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	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.	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.	Perform measurements for identified hadrons with heavy flavor valence quarks to constrain the mechanism for parton energy loss in the quark-gluon plasma at the Relativistic Heavy Ion Collider (RHIC).	Demonstrate the capability to extend the sensitivity of searches for neutrinoless double-beta decay by at least a factor of 5.	Perform measurements in experimental halls with CEBAF to enhance our understanding of the QCD structure of nuclei and hadronic matter.
Result		**Met**	**Met**	**Met**	**Met**	TBD	TBD
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 2016 Results (Action Plan if Not Met)	RHIC Run 16 was completed successfully, with STAR (Solenoidal Tracker at RHIC) and PHENIX (Pioneering High Energy Nuclear Interaction eXperiment) exceeding their heavy flavor data goals. PHENIX VTX (Vertex Detector Upgrade) and STAR HFT (Heavy Flavor Tracker) operated in RHIC Run 16 with refurbished detectors aimed at collecting high statistics for identified hadrons with heavy flavor valence quarks. Analysis of preliminary data from the STAR HFT on charm flow and suppression and of data from the STAR MTD (Muon Telescope Detector) on J/Psi and Upsilon mesons continued towards finalizing results for publication. Preliminary results from the PHENIX FVTX (Forward Vertex Detector Upgrade) on B production through the channel B -> J/Psi in Cu+Au collisions were released. The relative yield of the Psi(2S) to Psi(1S) mesons in p+p, p+Au, and p+Al were measured using the PHENIX FVTX, and the results were submitted for publication.							
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 FY16 target is met when data is obtained from Au+Au collisions of identified hadrons with heavy flavor in Run 16 and previous sets of data are analyzed to study mechanisms for parton energy loss in the quark-gluon plasma (QGP).

ARPA-E

Advanced Research Projects Agency - Energy

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %	N/A; ARPA-E is proposed for elimination in the FY 2018 Budget.
Result	**Met** - 70	**Met** - 70	**Met** - 70	**Met** - 100	**Met** - 100	TBD	N/A
Endpoint Target	Measure of efficiency in awarding funds.						
Commentary on 2016 Results (Action Plan if Not Met)	In FY 2016, 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 selected in FY 2016 (e.g., IONICS, SHIELD, GRID DATA, NODES, and Open FOA) had more than 100% of awardee funding committed within 45 days of selection.						
Documentation, Limitations, Methodology, Validation, and Verification	ARPA-E Internal Records						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				≥ 3 new companies founded	≥ 3 new companies founded	≥ 3 new companies founded	N/A
Result				**Met**	**Met**	TBD	N/A; ARPA-E is proposed for elimination in

							the FY 2018 Budget.
Endpoint Target	Measure of impact of ARPA-E awards on creating new jobs and industries.						
Commentary on 2016 Results (Action Plan if Not Met)	As reported in a February 2016 press release, ARPA-E funded research has led to the formation of at least 36 new companies. ARPA-E expects this trend to continue at the rate of 3 company formations per year. Throughout the duration of FY 2016, ARPA-E will continue to monitor this metric and report the total in a February 2017 press release.						
Documentation, Limitations, Methodology, Validation, and Verification	ARPA-E FY 2016 Press Release: http://arpa-e.energy.gov/sites/default/files/documents/files/2016_Summit_Press_Release_Addendum_FINAL.pdf						

Chief Information Officer

Departmental Administration

Program	Departmental Administration						
Performance Goal (Measure)	**Anti-Phishing** - Performance of Anti-Phishing measurements must be greater than or equal to 90% on at least 5 of 7 capabilities.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				≥ 5 capabilities greater than 90%	≥ 5 capabilities greater than 90%	≥ 5 capabilities greater than 90%	≥ 5 capabilities greater than 90%
Result				**Not Met** - 3	**Not Met** - 2	TBD	TBD
Endpoint Target	The target performance on at least 5 of 7 anti-phishing capabilities should be 90% or greater.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration						
Performance Goal (Measure)	**Anti-Phishing and Malware Defense (APMD)** - Implement technologies, processes, and training that reduces the risk of malware being introduced through email and malicious or compromised web sites.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				= 59 %	= 71 %	N/A	N/A
Result				**Not Met** - 51	**Not Met** - 61	N/A	N/A
Endpoint Target	Establish and maintain an Anti-Phishing and Malware Defense performance measure of 90% or better by Q1 in FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	The average FY16 Q4 result for the Anti-Phishing and Malware Defense (APMD) performance measure was 61% or 10% below the average FY16 target of 71%. Within this measure, the APMD category performance of 78% did exceed the FY16 Q4 target of 76%. However, the Malware Defense performance of 54% did not meet the FY16 Q4 target of 80% and the Blended Defense performance of 40% did not meet the FY16 Q4 target of 56%. NOTE: Beginning in FY 2017, this goal is replaced with separate goals for Anti-Phishing, Malware Defense and Other Defenses. **Action Plan:** Implement technologies, processes, and training to reduce the risk of malware introduced through email and malicious or compromised web sites.						

Documentation, Limitations, Methodology, Validation, and Verification	Performance and Financial Report Cybersecurity Cross-Agency Priority CAP Goals Nov 2016

Program	Departmental Administration						
Performance Goal (Measure)	**Continuous Monitoring** - Provide ongoing observation, assessment, analysis, and diagnosis of an organization's cybersecurity.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				= 63 %	= 69 %	N/A	N/A
Result				**Met** - 64	**Met** - 69	N/A	N/A
Endpoint Target	Establish and maintain a Continuous Monitoring performance measure of 95% or better by Q2 in FY 2018.						
Commentary on 2016 Results (Action Plan if Not Met)	The FY16 Q4 Continuous Monitoring performance met the DOE FY16 Q4 target of 69%. NOTE: Beginning in FY 2017, this goal is replaced with separate goals for Hardware Asset Management, Software Asset Management, Vulnerability Management, and Secure Configuration Management.						
Documentation, Limitations, Methodology, Validation, and Verification	Performance and Financial Report Cybersecurity Cross-Agency Priority CAP Goals Nov 2016						

Program	Departmental Administration						
Performance Goal (Measure)	**Federated Identity Management Infrastructure** - Implement Federated Identity Management Infrastructure linking identity sources across DOE to OneID						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						= 75 %	= 95 %
Result						TBD	TBD
Endpoint Target	The target is for all identity sources across DOE to be linked to OneID.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Departmental Administration

Performance Goal (Measure)	**Hardware Asset Management** - Achieve performance of 95% or greater for both Hardware Asset Management metrics (asset detection and asset meta data collection)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result				**Not Met** – 87%	**Not Met** – 60%	TBD	TBD
Endpoint Target	Performance must be greater than or equal to 95%.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration						
Performance Goal (Measure)	**High-Priority Enablement-Ready Applications** - Implement High-Priority Enablement-Ready Applications into the federated access management framework						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						= 10 %	= 30 %
Result						TBD	TBD
Endpoint Target	The endpoint target is to integrate all high priority enablement-ready applications into the federated access management framework.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Departmental Administration
Performance Goal (Measure)	**MFA - Privileged Network Account performance** - LOA 4 for Privileged Network Accounts must be equal to 100%.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target				= 100 %	= 100 %	= 100 %	= 100 %
Result				**Not Met** - 7	**Not Met** - 82	TBD	TBD
Endpoint Target	Endpoint Target Performance must be equal to 100%.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration						
Performance Goal (Measure)	**MFA - Unprivileged Network Account performance** - LOA 4 for Unprivileged Network Accounts must be equal to 100%.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				= 85 %	= 85 %	= 85 %	= 90 %
Result				**Not Met** - 11	**Not Met** - 52	TBD	TBD
Endpoint Target	Endpoint Target Performance must be equal to 100%.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration
Performance Goal (Measure)	**Malware Defense** - Performance of Anti-Phishing measurements must be greater than or equal to 90% on at least 3 of 5 capabilities.

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target				≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%
Result				**Not Met** - 0	**Not Met** - 0	TBD	TBD
Endpoint Target	The target performance on at least 3 of 5 malware defense capabilities should be 90% or greater.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration						
Performance Goal (Measure)	**Other Defenses** - Performance of "Other Defenses" measurements must be greater than or equal to 90% on at least 2 of 4 capabilities.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%
Result				**Not Met** - 0	**Not Met** - 1	TBD	TBD
Endpoint Target	The target performance on at least 2 of 4 other defense capabilities should be 90% or greater.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration
Performance Goal (Measure)	**Secure Configuration Management** - Achieve performance of greater than or equal to 95% for Secure Configuration Management

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target				≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result				**Not Met** - 91	**Not Met** - 77	TBD	TBD
Endpoint Target	Performance must be greater than or equal to 95%.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration						
Performance Goal (Measure)	**Software Asset Management** - Achieve performance of greater than or equal to 95% for both Software Asset Management metrics (software inventory and software white-listing)						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result				**Not Met** - 39	**Not Met** - 44	TBD	TBD
Endpoint Target	Performance must be greater than or equal to 95%.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update						

Program	Departmental Administration						
Performance Goal (Measure)	**Standards Based Federated Access Management Infrastructure** - Implement Standards Based Federated Access Management Infrastructure across DOE to enable single sign-on						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target						= 50 %	= 95 %
Result						TBD	TBD
Endpoint Target	The target is for the entire infrastructure across DOE to enable single sign-on.						
Commentary on 2016 Results (Action Plan if Not Met)							

Documentation, Limitations, Methodology, Validation, and Verification	

Program	Departmental Administration						
Performance Goal (Measure)	**Strong Authentication (PIV)** - Implement a set of capabilities that ensures users must authenticate to information technology resources and have access to only those resources that are required for their job function.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				= 26 %	= 93 %	N/A	N/A
Result				**Not Met** - 23	**Not Met** - 47	N/A	N/A
Endpoint Target	Establish and maintain a Strong Authentication performance measure of 100% for Privileged Network Users and 85% or better for Unprivileged Network Users.						
Commentary on 2016 Results (Action Plan if Not Met)	The average FY16 result for the Strong Authentication performance measure reached an end of the year performance of 47%, approximately half of the FY16 target of 93%. Note: As of FY 2017, this goal is replaced with separate goals for Unprivileged Network Accounts performance, Privileged Network Accounts performance, implementation of federated identity management infrastructure, implementation of standards based federated access management infrastructure and integration of high priority, enablement-ready applications into the federated access management framework. **Action Plan:** Ensure only authorized users have access to Federal information systems; and ensure only authorized users have access to information needed for designated business functions.						
Documentation, Limitations, Methodology, Validation, and Verification	Performance and Financial Report Cybersecurity Cross-Agency Priority CAP Goals Nov 2016						

Program	Departmental Administration						
Performance Goal (Measure)	**Vulnerability Management** - Achieve performance greater than or equal to 95% for Vulnerability and Weakness Management						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target				≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result				**Not Met** - 31	**Not Met** - 64	TBD	TBD
Endpoint Target	Performance must be greater than or equal to 95%.						
Commentary on 2016 Results (Action Plan if Not Met)							

Documentation, Limitations, Methodology, Validation, and Verification	https://www.performance.gov/node/3401/view?view=public#progress-update

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 4% in cost savings against actionable spend by end of fiscal year. Institute a corporate approach (including the laboratories) for strategic sourcing to achieve at least a 4% cost savings target against actionable spend on products and services.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	$250M	195 $M Cost Savings	> 247 $M Cost Savings	> 261 $M Cost Savings	> 269.5 $M Cost Savings	292.4 $M Cost Savings	252 $M Cost Savings
Result	**Met** - 321.7	**Met** - 223.7	**Met** - 295.5	**Met** - 380.8	**Met** - 441.4	TBD	TBD
Endpoint Target	Achieve 4% cost savings target against actionable spend on products and services.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	This is ongoing goal. The source for strategic sourcing data is the Policy Flash 2014-16, Standardized Cost Savings Definitions and Reporting Template – Update.						

Program	Departmental Administration						
Performance Goal (Measure)	**Maintain certified acquisition professionals** - Maintain levels of certified acquisition professionals						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	0.85	90 %	> 90 %	85 %	85 %	85 %	85 %
Result	**Met** - 0.93	**Met** - 95	**Met** - 93	**Met** - 85	**Met** - 99	TBD	TBD
Endpoint Target	Achieve certification levels of at least 90% for acquisition professionals.						
Commentary on 2016 Results (Action Plan if Not Met)	Certified professional levels are at 99%						
Documentation, Limitations, Methodology, Validation, and Verification	The data sources for the career management portion are the Federal Acquisition Institute Training Application System (FAITAS) and DOE Human Resource report.						

Program	Departmental Administration
Performance Goal (Measure)	**Reduce FOIA backlog** - Reduce Freedom of Information Act (FOIA) backlog

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target	335 cases	410 cases	< 10 %	10 %	10 %	10 %	3 %
Result	**Not Met** - 456	**Not Met** - 438	**Met** - 22	**Met** - 17	**Met** - 17.86	TBD	TBD
Endpoint Target	Continually reduce the FOIA backlog cases by 3% over the prior year backlog						
Commentary on 2016 Results (Action Plan if Not Met)	FOIA backlog reduced to 230 cases						
Documentation, Limitations, Methodology, Validation, and Verification	FOIA database housed in Forrestal Bldg is maintained to track the number of cases						

Program	Departmental Administration						
Performance Goal (Measure)	**Reduce travel expenses** - Reduce non-mission essential travel expenses						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	$47.5M	30 % reduction	< 30 %	30 %	30 %	N/A	N/A
Result	**Not Met** - 53	**Met** - 30	**Met** - 30	**Not Met** - 28.6	**Met** - 30	N/A	N/A
Endpoint Target	Reduce non-mission essential travel expenses by 30% using FY 2010 baseline for non-mission essential travel of $41.5M.						
Commentary on 2016 Results (Action Plan if Not Met)	Target is a cumulative of Q1, Q2, Q3 and Q4. Per Executive Order 13589, agencies were required to report to the Office of Management and Budget (OMB) travel savings goals from 2013 through 2016. The order requirements have been successfully met.						
Documentation, Limitations, Methodology, Validation, and Verification	Reports used to maintain data are IDW Business Intelligence travel reports.						

Program	Departmental Administration
Performance Goal (Measure)	**Un-assessed DOE Buildings** - Decrease percentage of un-assessed DOE Buildings, OSFs and Trailers (excluding FERC, LM, NR and PMAs).

Fiscal Year	2012	2013	2014	2015	2016	2017	2018
Target						5 % reduction of un-assessed buildings	5 % reduction of un-assessed buildings
Result						TBD	TBD
Endpoint Target	Decrease of 5% below the prior year's baseline each year.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Project Management Oversight and Assessments Office

Program	Departmental Administration						
Performance Goal (Measure)	**Project Management Success** - Complete 90% of the construction projects at the original scope and within 10% of cost baseline established at Critical Decision (CD)-2, approve performance baseline.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target			90 %	90 %	90 %	90 %	90 %
Result			**Not Met** - 76	**Not Met** - 78	**Met** - 91	TBD	TBD
Endpoint Target	On a three-year rolling basis, complete at least 90% of departmental construction projects within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2.						
Commentary on 2016 Results (Action Plan if Not Met)	For the first time, the Department achieved a success rate of 91% for construction projects, exceeding the 90% target established in FY 2008.						
Documentation, Limitations, Methodology, Validation, and Verification	Managed by the Project Management Policy & Systems Division within the Office of Project Management Oversight and Assessments. Documentation: Maintained in the Department's central repository for key departmental-level project information called the Project Assessment and Reporting System (PARS IIe). Limitations: Data is not available until 45 days after the end of each quarter throughout the FY. Methodology: The analyst will query PARS IIe for any capital asset project that achieved Critical Decision (CD)-4, Project Completion, over the past three fiscal years to determine project management success. The analyst will compare the delineated scope, cost, schedule, and key performance parameter criteria of CD-2, Performance Baseline, and CD-4, approval memorandums to determine success. Validation: Results are shared with the project's respective Program Office to review the assessment prior to publishing to ensure data were not missed that could impact a success rating. Verification: An assessed rating is verified to ensure it is underpinned by the appropriate documentation in PARS IIe.						

Human Capital Management

Program	Departmental Administration						
Performance Goal (Measure)	**Annual reductions in the average time-to-hire** - 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≤ 80 Calendar Days	≤ 80 Calendar Days	≤ 80 Calendar Days	≤ 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	**Not Met** - 106.5	TBD	TBD
Endpoint Target	Each HR Office will have an average time-to-hire of 80 days or less.						
Commentary on 2016 Results (Action Plan if Not Met)	N/A **Action Plan:** Continued standup of the Human Resource Service Delivery model to address time to hire through reformulation of standard operating practices.						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	100 %	100 %	100 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Not Met** - 325	**Met** - 100	**Not Met**	**Met** - 95	**Met** - 92.1	TBD	TBD
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 2016 Results (Action Plan if Not Met)	N/A						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	4 cases	3 cases	4 cases	4 cases	3 cases	3 cases	3 cases
Result	**Met** - 4	**Met** - 3	**Met** - 3	**Met** - 3	**Met** - 0	TBD	TBD
Endpoint Target	3						
Commentary on 2016 Results (Action Plan if Not Met)	Fewer than 3 security clearance cases (0 cases) older than 120 days old as of the end of the Fiscal Year. At no point during the Fiscal Year was there more than 1 case older than 120 days.						
Documentation, Limitations, Methodology, Validation, and Verification	Legal Files Case Tracking Software						

Loan Programs

Loan Program Office

Program	Loan Program Office						
Performance Goal (Measure)	**ATVM Battery Production Capacity** - Battery production capacity of 100,000 lithium-ion EV batteries (2,400,000 kWh) established						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target		≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries
Result		**Met** - 100,000	**Met** - 100,000	**Met** - 100,000	**Met** - 100,000	TBD	TBD
Endpoint Target	Assist in the development of advanced battery manufacturing capacity to support electric vehicles.						
Commentary on 2016 Results (Action Plan if Not Met)	In FY16, Borrowers that have received Direct Loans to produce lithium-ion Electric Vehicle batteries achieved the targeted capacity to support more than 100,000 electric vehicles.						
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on Battery Productions Reports received quarterly from borrowers. Consistent with the FY 2018 Budget, no additional loans are expected to contribute to this performance measure.						

Program	Loan Program Office						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target		≥ 200 Million Gallons	250 Million Gallons	290 Million Gallons	290 Million Gallons	290 Million Gallons	270 Million Gallons
Result		**Met** - 280	**Met** - 306	**Met** - 335.3	**Not Met** - 270	TBD	TBD
Endpoint Target	Assist in the reduction of petroleum usage.						
Commentary on 2016 Results (Action Plan if Not Met)	In FY16, Borrowers that have received Direct Loans to support the manufacturing of advanced technology vehicles and associated components did not achieve the targeted 290 million gallons reduction of petroleum usage. Those Borrowers over forecasted their targeted reduction of petroleum usage by approximately 20 million gallons. **Action Plan:** Borrowers that have received Direct Loans to support the manufacturing of advanced technology vehicles and associated components over forecasted their targeted reduction of petroleum usage by approximately 20 million gallons. Work with Borrowers to improve the accuracy of forecast.						

Documentation, Limitations, Methodology, Validation, and Verification	The final results reported are estimates based on Petroleum Usage Reduction Reports received quarterly from Borrowers. Petroleum reduction results are based on the number of fuel efficient automobiles manufactured using technologies funded by ATVM direct loans. Borrowers will not know the actual reduction in petroleum usage until one after fuel efficient automobiles are on the road. Resultantly, the final results reported are estimates. Consistent with the FY 2018 Budget, no additional loans are expected to contribute to this performance measure.

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 2,000,000 mt	≥ 5,000,000 mt	≥ 5,000,000 mt	≥ 16,400,000 mt	≥ 21,200,000 mt	≥ 21,200,000 mt	≥ 21,200,000 mt
Result	**Met** - 2,050,000	**Not Met** - 3,150,000	**Met** - 8,300,000	**Not Met** - 13,100,000	**Not Met** - 18,300,000	TBD	TBD
Endpoint Target	Assist in the reduction of CO2 emissions.						
Commentary on 2016 Results (Action Plan if Not Met)	LPO did not issues any new loan guarantees in FY16 to borrowers with projects aimed at reducing CO2 emissions. The EOY results of 18,300,000 mt of avoided CO2 emissions was achieved through existing loan guarantees borrowers with projects aimed at reducing CO2. **Action Plan:** To increase CO2 emissions avoidance, LPO will continue to work with existing borrowers to maximize the performance of projects in the portfolio and work with applicants to potentially add new CO2 emissions avoiding projects in FY 2017.						
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on CO2 Avoidance Reports received quarterly from borrowers. Estimated annual CO2 emissions reductions of projects receiving loan guarantees that have achieved commercial operations compared to 'business as usual' energy generation. Consistent with the FY 2018 Budget, no additional loans are expected to contribute to this performance measure.						

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	2012	2013	2014	2015	2016	2017	2018
Target	≥ 1.3 GW	≥ 2.8 GW	≥ 3.8 GW	≥ 4 GW	≥ 4 GW	≥ 4 GW	≥ 4 GW
Result	**Met** - 1.5	**Not Met** - 1.9	**Not Met** - 3.2	**Not Met** - 3.82	**Met** - 4	TBD	TBD
Endpoint Target	Assist in the development of electricity generation capacity.						
Commentary on 2016 Results (Action Plan if Not Met)	LPO did not issues any new loan guarantees in FY16 to borrowers with projects aimed at increasing annual electricity generation capacity. The EOY results of 4.0 GW of annual electricity generation capacity was achieved through existing loan guarantees borrowers with projects aimed at increasing annual electricity generation capacity.						
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.						

Environment, Health, Safety and Security

Departmental Administration

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys
Result	**Met** - 99	**Met** - 98	**Met** - 97	**Met** - 97	**Met** - 98	TBD	TBD
Endpoint Target	N/A; ongoing						
Commentary on 2016 Results (Action Plan if Not Met)	The survey satisfaction results demonstrate Environment, Health, Safety and Security's and the Department's commitment to its employees and former employees regarding the implementation of the medical screening program. Obtained an average rating of 98% satisfaction on customer satisfaction surveys from former worker medical screening program participants who receive medical screenings.						
Documentation, Limitations, Methodology, Validation, and Verification	Customer satisfaction surveys.						

Energy Information Administration

Energy Information Administration

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	= 90 % customer satisfaction rating	= 90 % customer satisfaction rating	= 90 % customer satisfaction rating	≥ 90 % of customers satisfaction rating	≥ 90 % of customer satisfaction rating	≥ 90 % of customer satisfaction rating	≥ 90 % of customer satisfaction rating
Result	**Met** - 91	**Met** - 92	**Met** - 95	**Met** - 90	**Met** - 93	TBD	TBD
Endpoint Target	This is an ongoing annual performance measure, as information quality is central to EIA's mission.						
Commentary on 2016 Results (Action Plan if Not Met)	EIA actively solicits external feedback to gain a better understanding of who uses the agency's information products, how they are used, and most importantly, whether they meet customers' diverse and evolving needs. This feedback spurs product innovation, which in turn supports the Department's role in leading the National conversation on energy.						
Documentation, Limitations, Methodology, Validation, and Verification	EIA conducted the survey with OMB approval and the results are stored in the files of the Office of Communications and outreach in EIA.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
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 schedule	≥ 95 % of products released on schedule	≥ 95 % of products released on schedule
Result	**Met** - 97	**Met** - 96	**Met** - 96	**Met** - 95	**Met** - 97	TBD	TBD
Endpoint Target	This is an ongoing annual performance measure, as timely delivery of energy information is central to EIA's mission.						
Commentary on 2016 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

Program	Southeastern Power Administration						
Performance Goal (Measure)	**SEPA Repayment of Federal Power Investment** - Ensure timely repayment of Federal investment in accordance with DOE Order RA 6120.2 by maintaining unpaid investment (UI) equal to or less than the allowable unpaid investment (AUI) in accordance with DOE Order RA 6120.2.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 100 percent	≥ 100 percent	≥ 100 percent	≤ 2.148 AUI	≤ 2,143 million dollars AUI	≤ 2,212 million dollars AUI	≤ 2,138 million dollars AUI
Result	**Met** - 100	**Not Met**	**Met** - 100	**Met** - 1.686	**Met** - 1,626	TBD	TBD
Endpoint Target	Meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.						
Commentary on 2016 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Rates and Repayment: Statement of Project Revenues, Expenses, and Repayment of Investment						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	> 100 CPS1 rating with CPS2>90	CPS1 100 rating with CPS2>90	> 100 CPS1 rating with CPS2>90	> 100 CPS1 rating with CPS2>90	> 100 CPS1 rating with CPS>90	> 100 CPS1 rating	> 100 CPS1 rating
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	Ensure the integrity of the Nation's integrated grid by operating in compliance with National Energy Reliability Standards.						
Commentary on 2016 Results (Action Plan if Not Met)	CPS1 = 200.51						

	CPS2 is no longer a part of the NERC standard for system reliability, with a replacement measure becoming effective during FY 2016.
Documentation, Limitations, Methodology, Validation, and Verification	NERC Control Performance Standards Summary (Operations Center)

Southwestern Power Administration

Southwestern Power Administration

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages
Result	**Met** - 1	**Met** - 1	**Met** - 0	**Met** - 3	**Met** - 2	TBD	TBD
Endpoint Target	Southwestern provides reliable service to customers each year, thereby maintaining power system reliability.						
Commentary on 2016 Results (Action Plan if Not Met)	<=3 accountable outages						
Documentation, Limitations, Methodology, Validation, and Verification	Data has been provided by Southwestern's Deputy Administrator Office of Power Delivery.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	< 0.063 $/kWh	< 0.063 $/kWh	< 0.063 $/kWh	< 0.063 $/kWh	< 0.063 $/kWh	< 0.065 $/kWh	N/A*
Result	**Met** - 0.0156	**Met** - 0.0158	**Met** - 0.0182	**Met** - 0.0176	**Met** - 0.0163	TBD	N/A
Endpoint Target	Southwestern will continue to control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.						
Commentary on 2016 Results (Action Plan if Not Met)	<= 0.063$/kWh. NOTE: No target has been set for FY 2018 for this measure. While providing low cost power is a goal, the current method used to determine the target needs to be reevaluated. Prior information that was available is no longer supplied by utilities. A revised goal will be developed for inclusion in the FY 2019 Budget Request and Performance Plan.						

Documentation, Limitations, Methodology, Validation, and Verification	Data provided by Division of Resources and Rates, calculated in house for quarterly updates.

Program	Southwestern Power Administration						
Performance Goal (Measure)	**SWPA 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≤ 1,336 million in AUI	≤ 1,477 million in AUI	1,477 million in AUI	≤ 1,387 million in AUI	≤ 1,460 million in AUI	≤ 1,536 million in AUI	≤ 1,590 million in AUI
Result	**Met** - 411	**Met** - 440	**Met** - 442	**Met** - 466	**Met** - 504	TBD	TBD
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.						
Commentary on 2016 Results (Action Plan if Not Met)	504 UI (Unpaid Investment)						
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by the Division of Resources and Rates for quarterly updates.						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	> 100 CPS1 rating with CSP2>90	> 100 CPS1 rating and CPS2>90	> 100 CPS1>100 rating with CSP2>90	CPS1>100 and CPS2>90	CPS1>100 and CPS2>90	CPS1>100	CPS1>100
Result	**Met** - 187	**Met** - 186.74	**Met** - 187.97	**Met** - 214.3	**Met** - 220.25	TBD	TBD
Endpoint Target	Southwestern ensures the integrity of the nation's integrated grid by operating in compliance with National Energy Reliability Standards.						

Commentary on 2016 Results (Action Plan if Not Met)	Southwestern achieved 6 out of 6 control compliance ratings. Southwestern's average annual results are 210.10 for CPS1. CPS2 was abolished by NERC in July 2016. CPS2 will no longer be reported.
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by the Division of Scheduling and Operations for quarterly updates.

Western Area Power Administration

Western Area Power Administration

Program	Western Area Power Administration						
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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≤ 8.692 billion dollars UI	≤ 8.594 billion dollars UI	≤ 8.667 billion dollars UI	≤ 8.632 billion dollars AUI	≤ 8.025 billion dollars AUI	≤ 7.996 billion dollars AUI	≤ 7.85 billion dollars AUI
Result	**Met** - 6.166	**Met** - 6.204	**Met** - 5.476	**Met** - 5.214	**Met** - 5.318	TBD	TBD
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.						
Commentary on 2016 Results (Action Plan if Not Met)	Met (green): Collective repayment for Western's projects through the 4th quarter of FY 2016 indicate that UI is on target to remain less than or equal to AUI.						
Documentation, Limitations, Methodology, Validation, and Verification	Repayment statistics are compiled annually by project from the most recent final power repayment study (PRS) 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 Power Repayment Studies.						

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). Following FY16, WAPA will only be measuring the CPS1 target as NERC has removed the target for CPS2.						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**

Target	> 100 CPS1 rating with CPS2>90	> 100 CPS1>100, CPS2>90	> 100 CPS1 rating with CPS2>90	CPS1>100; CPS2>90	> 100 CPS1 rating with CPS2>90	> 100 CPS1 Rating	> 100 CPS1 Rating
Result	**Met** - 165	**Met** - 152.91	**Met** - 171.78	**Met** - 162.18	**Met** - 142.52	TBD	TBD
Endpoint Target	Ensure the integrity of the nation's integrated grid by operating in compliance with National Energy Reliability Standards						
Commentary on 2016 Results (Action Plan if Not Met)	Met (green) with an annual average CPS1 of 142.52. WAPA's control area achieved a "Pass" rating for CPS1 during the 4th quarter of FY 2016 as well, with an average CPS1 of 134.83. CPS2 is no longer a part of the NERC standard for system reliability, with a replacement measure becoming effective during FY 2016 (see Reliability Standard BAL-001-2). WAPA is currently following this new standard and is considering how best to implement this new measure of system reliability for purposes of annual performance reporting.						
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 supervisory control and data acquisition (SCADA) system. The North American Electric Reliability Corporation's (NERC) Control Performance Standard (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

Program	Bonneville Power Administration						
Performance Goal (Measure)	**BPA Hydropower Generation Efficiency Performance** - Achieve 97.5% Heavy-Load-Hour Availability (HLHA) through efficient performance of Federal hydro-system processes and assets, including joint efforts of BPA, Army Corps of Engineers, and Bureau of Reclamation. 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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent
Result	**Met** - 102	**Met** - 102.3	**Met** - 100.7	**Met** - 100.6	**Met** - 102.1	TBD	TBD
Endpoint Target	Maintain at least 97.5% Heavy-Load-Hour Availability						
Commentary on 2016 Results (Action Plan if Not Met)	Target Met: Bonneville and its Federal Columbia River Power System partners met this operational goal for the hydropower system with a result of 102.1% for FY 2016. 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	Quarterly Findings Memo (from BPA Chief Operating Officer to BPA Administrator)						

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	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	TBD	TBD
Endpoint Target	Continue to meet planned annual repayment of principal						
Commentary on 2016 Results (Action Plan if Not Met)	Target Met: BPA made a total annual payment of $1.9 billion of which $1.4 billion was principal amortization. BPA met this performance target for the 33rd straight year, demonstrating Bonneville's ongoing commitment to meeting its obligations to U.S. taxpayers.						

Documentation, Limitations, Methodology, Validation, and Verification	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 Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) which measures generation/load balance on one-minute intervals (rating > or = 100).						
Fiscal Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Target	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent
Result	**Met** - 132.69	**Met** - 116.09	**Met** - 130.39	**Met** - 139.91	**Met** - 143.8	TBD	TBD
Endpoint Target	Maintain CPS1 score of >= 100						
Commentary on 2016 Results (Action Plan if Not Met)	Through the end of the quarter, BPA achieved performance on CPS-1 of 143.80%, 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	Quarterly Findings Memo (from BPA Chief Operating Officer to BPA Administrator)						