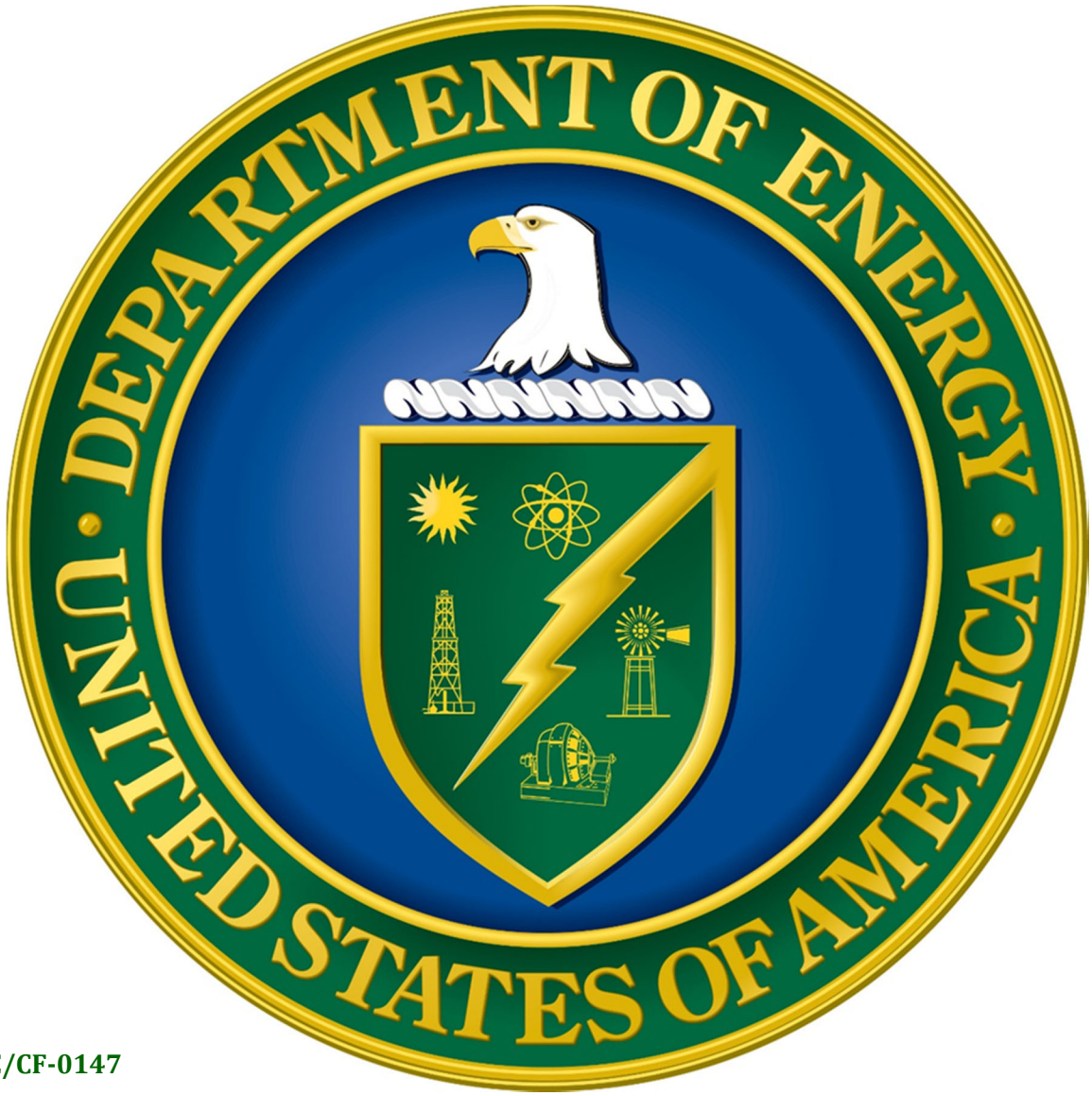
Fiscal Year 2017 Annual Performance Report
Fiscal Year 2019 Annual Performance Plan



DOE/CF-0147

Table of Contents

Introduction 4

Mission 4

Overview 4

DOE Organization 4

FY 2016 – 2017 Agency Priority Goals 6

Cross-Agency Priority Goals 11

Cross-Agency Collaborations 11

Management Review 11

Lower-Priority Program Activities 11

Program Performance Goals and Targets 11

- National Nuclear Security Administration 12
- Energy Efficiency and Renewable Energy 64
- Electricity Delivery 92
- Cybersecurity, Energy Security, and Emergency Response 99
- Fossil Energy Research and Development 103
- Petroleum Reserves 111
- Nuclear Energy 116
- Environmental Management 126
- Legacy Management 139
- Office of Science 141
- ARPA-E 162
- Chief Information Officer 164
- Office of Management 176
- Office of Project Management 182
- Human Capital Management 183
- Hearings and Appeals 186
- Loan Programs 187
- Environment, Health, Safety and Security 191
- Energy Information Administration 192

Southeastern Power Administration 194
Southwestern Power Administration 197
Western Area Power Administration 202
Bonneville Power Administration 205
Indian Energy Policy and Programs 208
Office of Technology Transitions 210
Office of Small and Disadvantaged Business Utilization 211
APPENDIX 1: ADDITIONAL INFORMATION 213
Fiscal Year 2016 Unmet Performance Targets 213
Performance Goals Discontinued as of Fiscal Year 2017 220
Evaluations Completed in Fiscal Year 2017 223
Goals to Address Management Priorities 234

Introduction

The *Fiscal Year (FY) 2017 DOE Annual Performance Report / FY 2019 Annual Performance Plan* contains details of the Department of Energy's (DOE) program performance, showing the historical targets and results from FY 2013 through 2017 and performance targets for FYs 2018 and 2019 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 2017 were revised from the FY 2017 targets presented in the FY 2018 Congressional Budget Request to reflect enacted appropriations. FY 2018 performance targets reflect the funding level in the FY 2018 Consolidated Appropriations Act. FY 2019 performance targets reflect the FY 2019 Budget Request level.

Mission

The mission of the Department of Energy is to advance U.S. national security and economic growth through transformative science and technology innovation that promotes affordable and reliable energy through market solutions and meets our nuclear security and environmental cleanup challenges.

Overview

The DOE enterprise is comprised of approximately 14,000 federal employees and over 95,000 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.

FY 2016 – 2017 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 FY 2016 - 2017 agency priority goals as of September 30, 2017. These goals reflect the goals of the previous Administration and are not necessarily representative of the goals of the new Administration.

Program	Goal Statement	Performance Measures	Result
Nuclear Security	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.	**Met** – DOE/NNSA completed over 80% of the total production unit builds in FY 2017 for the W76-1 LEP.
		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.	**Met** – DOE/NNSA 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. In FY 2017, the B61-12 LEP completed a First System Qualification Drop Test in March 2017 and two qualification flight tests in November 2017
		Complete delivery and installation of a cumulative total of 755 fixed, mobile, and man-portable radiation detection systems by the end of FY 2017.	**Met** – DOE/National Nuclear Security Administration (NNSA) Global Material Security's (GMS) Nuclear Smuggling Detection and Deterrence (NSDD) deployed a cumulative total of 779 fixed and mobile detection systems.
Energy Policy	To enable cost-competitive, clean energy technologies and resilient energy infrastructure consistent	Issue final energy standards that meet the Climate Action Plan goal of 3 GT total cumulative CO_2 reduction by 2030.	**Met** – DOE issued final energy standards that exceeded the goal of 3 billion metric tons of avoided carbon.

Program	Goal Statement	Performance Measures	Result
	with the Climate Action Plan, Quadrennial Energy Review (QER), and Quadrennial Technology Review (QTR).	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.	**Met** – Loan Program Office (LPO) accepted applications in response to open Title XVII solicitations. In December 2016 LPO issued a conditional commitment of up to $2 billion in loan guarantees to Lake Charles Methanol, LLC for an Advanced Fossil Energy project.
		Solicit additional applications, and as appropriate, issue new conditional loan commitments to increase fuel efficient vehicle and advance vehicle component manufacturing.	**Met** – 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. No conditional commitments were issued in FY 2017.
		Issue semiannual implementation reports on *Transforming U.S. Energy Infrastructures in a Time of Rapid Change.*	**Met** – 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.	**Met** – DOE released the second installment of the QER in January 2017.
		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	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	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** –DOE established a multiyear exascale research program plan through the Department's Exascale Computing Initiative (ECI).
		By the end of FY 2017, identify software technology investments needed to accelerate delivery of a capable exascale system.	**Met** – Exascale application and software requirements to support exascale-based functions were gathered. Structured reviews of these requirements identified needed investments in

Program	Goal Statement	Performance Measures	Result
	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 current semiconductor technologies are reached.		software stack technology to accelerate the delivery of a capable exascale system.
		By Q4 FY 2017 establish a plan for DOE's contribution to research of new progressive technologies that perform beyond Moore's Law.	**Met** – A program plan to develop technologies beyond Moore's Law was established.
Environmental Management and Nuclear Waste Disposal	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.	**Met** – WIPP was reopened in December 2016. Waste emplacement was restarted January 4, 2017.
		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.	**Not Met** – The Defense Waste Processing Facility (DWPF) at Savannah River Site produced a total of 133 high level waste canisters at Savannah River Site through September 2016, exceeding the FY 2016 target. DWPF was unable to meet the FY 2017 target due to equipment failure, producing 52 canisters.
		Complete demolition to achieve slab on grade of the Plutonium Finishing Plant at Richland by the end of calendar year 2016.	**Not Met** – Demolition is currently on hold as DOE and contractor take corrective action in response to contamination events.
		Begin treatment of radioactive liquid waste at the Integrated Waste Treatment Unit (IWTU) at Idaho by the end of FY 2016.	**Not Met** – The IWTU was in an outage to complete modifications that are expected to facilitate radioactive operations. A start-up plan is being implemented.
		Complete the Deep Borehole Field Test (DBFT) Characterization Borehole by February 2017.	**Discontinued** – Due to this Administration's efforts to restart the license application for Yucca Mountain and initiate a robust interim storage program, activities related to this measure were discontinued.

Program	Goal Statement	Performance Measures	Result
		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.	**Discontinued** – Due to this Administration's efforts to restart the license application for Yucca Mountain and initiate a robust interim storage program, activities related to this measure were discontinued.
		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, comments, and concerns expressed throughout the development process by Dec 2016.	**Discontinued** – Due to this Administration's efforts to restart the license application for Yucca Mountain and initiate a robust interim storage program, activities related to this measure were discontinued.
		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.	**Discontinued** – Due to this Administration's efforts to restart the license application for Yucca Mountain and initiate a robust interim storage program, activities related to this measure were discontinued.
Capital Projects	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.	**Met** –100% of projects were within their current cost baseline in effect as of the start of FY 2016.
National Laboratories	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	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.	**Met** – The percentage of assessed DOE laboratory facilities categorized as "adequate" increased by more than 2 percentage points from the FY 2015 baseline.
		Sponsor an annual "National Laboratory Big Ideas Summit" in FY 2016 and FY 2017.	**Met** – Summits were held in FY 2016 and FY 2017.

Program	Goal Statement	Performance Measures	Result
	laboratories to enable efficient leadership in science, technology, and national security	Develop and implement a consistent, annual process to track and assess laboratory planning and evaluation.	**Met** – DOE has implemented a consistent laboratory planning process for science and energy laboratories and developed and distributed a set of key attributes for all laboratory evaluation processes.

Cross-Agency Priority Goals

Per the GPRA Modernization Act requirement to address Cross-Agency Priority (CAP) Goals in the agency strategic plan, the annual performance plan, and the annual performance report please refer to www.Performance.gov for the agency's contributions to and progress towards FY 2018-2019 CAP Goals.

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. DOE also participates in numerous interagency working groups.

Management Review

The GPRA Modernization Act sets out a series of requirements for collecting, reviewing, and acting on performance measures and results. The law requires the Deputy Secretary to chair these quarterly reviews. The Department will meet 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 is 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 provide 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.

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.

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 2013 through FY 2019 and results through FY 2017.

Performance targets for FY 2017 were revised from the FY 2017 targets presented in the FY 2018 Congressional Budget Request to reflect enacted appropriations. FY 2018 performance targets reflect the funding level in the FY 2018 Consolidated Appropriations Act. FY 2019 performance targets reflect the FY 2019 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 NNSA Federal Salaries and Expenses Federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≤5.9 %	≤5.9 %	≤5.9 %	≤5.9 %	≤5.9 %	≤5.9 %	≤5.9 %
Result	**Exceeded** - 4.2	**Exceeded** - 4.1	**Exceeded** - 3.9	**Exceeded** - 3.7	**Exceeded** - 3.8	TBD	TBD
Endpoint Target	In keeping with OMB and DOE expectations that administrative costs be minimized, maintain the NNSA Federal Salaries and Expenses federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%.						
Commentary on 2017 Results (Action Plan if Not Met)	Achieved the annual target of the NNSA Federal administrative costs as a percentage of total Weapons Activities, excluding Secure Transportation Asset, and Defense Nuclear Nonproliferation program costs at 5.9 percent or less. The administrative costs include all costs in the Federal Salaries Expenses Appropriation. The annual result is 3.8 percent. This result is important because it demonstrates a prudent use of valuable resources.						
Documentation, Limitations, Methodology, Validation, and Verification	The source of the costing data is the DOE STARS/IDW system. The calculation is based on the Federal Salaries and Expenses costs as a percentage of the total Weapons Activities, excluding Secure Transportation Asset, and Defense Nuclear Nonproliferation program costs						

Weapons Activities

Directed Stockpile Work

Program	Directed Stockpile Work						
Performance Goal (Measure)	**Annual Warheads Assessment** - Annual percentage of warheads in the stockpile that are assessed to determine whether they are safe, secure, reliable, and effective						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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, conduct 100% of the assessment activities to determine whether warheads in the stockpile are safe, secure, reliable, effective, and available to the President for deployment						
Commentary on 2017 Results (Action Plan if Not Met)	NNSA achieved the annual target by certifying 100% of the weapons in the active stockpile as safe, secure, reliable, and available to the President for deployment. NNSA met all requirements of 50 United States Code section 2525 as amended by Fiscal Year 2014 National Defense Authorization Act. Accomplishments included: 1) Laboratories issued final Cycle 22 Annual Assessment Reports (AARs) for each weapon system; 2) Laboratory Directors have issued their Annual Assessment Letters to the Secretaries of Energy and Defense; 3) NNSA has reviewed the Annual Assessment Reports and Laboratory Director letters and has briefed NNSA leadership; 4) On November 2, the three National Laboratory Directors and the Commander, U.S. Strategic Command briefed the Secretary of Energy on the results of the Cycle 23 Assessment. These activities ensure the overall availability and reliability of the Nation's nuclear defense.						
Documentation, Limitations, Methodology, Validation, and Verification	This measure of NNSA's annual assessment activities and results are documented in 1) Warhead specific Annual Assessment Reports and Weapon Reliability Reports; 2) Laboratory Director's and the U.S. STRATCOM Commander's Annual Assessment Letters: and 3) Annual Assessment Execution Plan. These certifications are based on science-based stockpile stewardship tools and assessments performed at the weapon laboratories.						

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 Production and Planning Directive (P&PD).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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	**Not Met** - 88	**Met** - 100	**Not Met** - 66	**Exceeded** - 102	**Met** - 100	TBD	TBD
Endpoint Target	Complete between FY 2009 and FY 2022 the dismantlement of the quantity of weapons in retired status at the end of FY 2008.						
Commentary on 2017 Results (Action Plan if Not Met)	100% 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.						
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); The dismantlements are considered complete when the NNSA Federal staff confirms that 100% of the weapons in retired status as of FY 2008 are dismantled.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	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	100 % of scheduled unit builds
Result	N/A	**Met** - 100	**Not Met** - 85	**Met** - 100	**Not Met** - 95	TBD	TBD
Endpoint Target	Complete production of the NWC-approved W76-1 LEP production schedule by FY 2019.						
Commentary on 2017 Results (Action Plan if Not Met)	NNSA did not meet the annual target of producing 100% of allocated War Reserve (WR) unit builds of the Nuclear Weapons Council-approved W76-1 Life Extension Program by year end FY2017. This is further represented in the annual Selected Acquisition Report (SAR). NNSA completed 95% of the WR production builds. NNSA met 99% of scheduled quantities for delivery to the Navy. NNSA completed 84% of the total WR production unit builds at the end of September 2017. This result is important because extending the life of the W76-0, a weapon system for Navy submarines, is on a highly success-oriented refurbishment schedule to meet DoD requirements and national security needs. **Action Plan:** NNSA expects to recover FY 2017 production shortfall within FY2018 QTR 1 as CNS has corrected the issues or implemented risk mitigation measures. No adverse impacts to Program Performance as the LEP remains ahead of the cumulative production commitment metric due to surplus units produced in FY 2016.						
Documentation, Limitations, Methodology, Validation, and Verification	1) W76-1 Selected Acquisition Report(s); 2) Planning and Production Directive (P&PD) (current FY revision); 3) W76-01 Program Control Document 2017-A dated 12-22-16 and subsequent PCD amendments; 4) Requirements and Planning Directive (RPD) (current FY revision 7) NNSA memorandum from J.M. Oder, Director, Office of Nuclear Weapon Stockpile, NA-122, to Distribution, "Update to W76-1 Production and Planning Directive 2011-1(U)," dated February 21, 2012March 12, 2013 – provides direction to NNSA M&O contractors to implement current W76-1 LEP program of record defined in FY 2013 RPD						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	1,872 TPBARs	2,416 TPBARs	3,120 TPBARs	3,120 TPBARs	3,824 TPBARs	4,928 TPBARs	4,928 TPBARs
Result	**Met** - 1,872	**Met** - 2,416	**Met** - 3,120	**Met** - 3,120	**Met** - 3,824	TBD	TBD
Endpoint Target	By the end of FY 2020, complete irradiation of 6,768 Tritium-Producing Burnable Rods (TPBARs) to provide tritium for nuclear weapons.						
Commentary on 2017 Results (Action Plan if Not Met)	NNSA completed the Tritium Production performance measure in March 2017 when 704 Tritium-Producing Burnable Absorber Rods (TPBARs) finished their irradiation cycle and were pulled from the Tennessee Valley Authority (TVA) Watts Bar Unit 1 Nuclear Power Plant bringing the total irradiated TPBARs to 3,824. Watts Bar Unit 1 then resumed operations in April with 1,104 TPBARs. These 1,104 TPBARs will complete their irradiated cycle in September 2018. This metric supports national security requirements. The quantities of TPBARs being irradiated are necessary to replace tritium lost to decay.						
Comment	Note: The Tennessee Valley Authority (TVA) Watts Bar Nuclear Power Plant Unit 1 completes irradiation of TPBARs 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. The pattern will continue through the life of the program.						
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)	**Science-Based Capabilities** - Provide the science-based capabilities necessary to support stockpile certification on an annual basis.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	100 % of progress	100 % of progress	100 % of progress
Result	N/A	N/A	N/A	N/A	**Met** - 100	TBD	TBD
Endpoint Target	Each year provide the science-based capabilities (e.g., experimental infrastructure, assessment and certification methodologies, experiments, data, and analyses) required to enable the annual assessment and certification of the stockpile including certification of LEPs and weapon modifications.						
Commentary on 2017 Results (Action Plan if Not Met)	The Science Campaign has accomplished its year end performance goal for FY2017 by providing the scientific capabilities needed to assess and certify the stockpile and to enable the building of programs for the Life Extension Program. The following are examples of milestones that the Science Program accomplished in FY2017: (1) comparison of radiochemistry analysis methods for two underground tests (UGTs), (2) execution of boost initial condition experiments, (3) analysis of data diagnostics from UGT s at a workshop to support boost physics predictive capability, (4) use the National Ignition Facility (NIF) 2-Shock platform to measure implosion-phase sensitivities, (5) continued execution of JASPER (a gas gun) special nuclear materials experiments, (6) development of a new technology to measure the equation of state (EOS) of Advanced Certification materials, (7) production, through a combination of new experimental results and theory developments, of cross sections with uncertainties for the Zr90 (n,gamma) benchmark reaction as well as a Y87 (n, gamma) reaction, (8) development of a platform to measure iron opacity as a result of work on NIF, (9) assessment of the viability of additive manufactured materials for stockpile applications, (10) completion of the measurement of the 239-Pu/235-U Fission Cross Section Ratio, and (11) delivery of low-energy Pu-239 data to the Advanced Simulation and Computing (ASC) program in August 2017, as planned.						
Documentation, Limitations, Methodology, Validation, and Verification	Predictive Capability Framework, Milestone Reporting Tool, White Paper on Quantification of Margins and Uncertainty Performance Measure ; Science Implementation Plan; and Science Program Plan						

Engineering

Program	Engineering						
Performance Goal (Measure)	**Engineering and Surveillance Capabilities** - Percentage progress toward providing planned/scheduled capabilities for survivability and surveillance required for annual assessment of the stockpile, Life Extension Program decisions, and early identification of aging problems that could degrade stockpile performance.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan (Annual)						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	21 deliverables	20 deliverables	22 deliverables	17 deliverables	13 deliverables	14 deliverables	N/A
Result	**Met** - 21	**Met** - 20	**Met** - 22	**Met** - 17	**Met** - 13	TBD	N/A
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 2017 Results (Action Plan if Not Met)	The measure met the annual target for FY 2017. Accomplishments include: Demonstrated several new technologies in a new multi-point safety (MPS) system, and performed initial function testing of the integrated system; Led multiple joint compatibility testing effort with the United Kingdom (UK) and other laboratories via Use Control Sub-Group (UCSG) Enhanced Collaboration (EC12); Completed Generation 4 (form factor) and Generation 3 (system context) demonstrators and integration between the two systems; Integrated Los Alamos National Laboratory (LANL) component with the Lawrence Livermore National Laboratory (LLNL) intrinsic use control (IUC) node electronics; Completed startup of Full Scale System Compatibility Test at the Device Assembly Facility, NV; Ran small scale tests for over 400 days, on track with calculated results; Completed mechanical analysis of system interaction with selected MPS approach; Reduced risk using a design that reduced cost by 1/3, reduced weight by 40%, and improved performance; Finished 2.5D Structural Test Unit tests and accomplished stretch goal of testing with Sandia National Laboratory (SNL) Joint Test Demonstrator system and LLNL provided hardware; Developed new characterization technique that will localize fabrication defects and allow for improvements in fabrication.						
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** - Complete high energy density physics research needed to support the nuclear weapons program as embodied in the Predictive Capability Framework (PCF).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	10 % of progress (cumulative)	20 % of progress (cumulative)	30 % of progress (cumulative)	40 % of progress (cumulative)	47 % of progress (cumulative)
Result	N/A	N/A	**Met** - 10	**Met** - 20	**Met** - 30	TBD	TBD
Endpoint Target	By FY 2024, complete the ICF Program activities needed to complete the PCF pegposts.						
Commentary on 2017 Results (Action Plan if Not Met)	The ICF Program achieved its FY2017 performance measure on progress towards completion of the high energy density physics research needed to support the nuclear weapons program as embodied in the predictive Capability Framework. There were accomplishments in several areas. Lawrence Livermore (LLNL) evaluated symmetry control in large case-to-capsule hohlraums with Beryllium (Be) capsules. It also evaluated symmetry control in intermediate filled hohlraums. LLNL developed a model for target scaling of best performing implosions. Rochester developed a 1D predictive cryogenic implosion platform. Los Alamos (LANL) and LLNL have assessed understanding of hydrocarbons (plastics), High Density Carbon (HDC) and Be designs. LANL completed double shell experiments using machined aluminum hemi-shells. LLNL and Rochester have developed lower gain direct drive target designs. Rochester and National Research Laboratory (NRL) have further developed a hybrid direct-indirect drive approach. They have also predicted and measured cross beam instability and Raman instability mitigation by laser bandwidth. LANL, LLNL and Sandia (SNL) developed the National Ignition Stagnation Physics (NISP) document that clarifies our understanding of stagnation. LLNL completed a 3-D surrogate simulation to model fill tube behavior. LLNL and Rochester measured hot-electron production in ignition scale coronal plasmas on National Ignition Facility (NIF). LLNL and Rochester improved 3-D HYDRA code capabilities. LLNL and SNL evaluated potential improvement for pulsed power current delivery. SNL executed the National Ignition Diagnostic Plan. SNL also completed an assessment of MagLIF mix as well as increasing laser coupling. SNL developed a quantitative stagnation model for MagLIF. It assessed uncontained trace tritium on Z. LLNL assessed options to improve the cost-effectiveness of operating NIF near its power/energy limits.						
Documentation, Limitations, Methodology, Validation, and Verification	1. Program Implementation Plans for ICF Program (NA-112) and Research and Development Program (Science, NA-113) document annually the program of work to be accomplished in support of the PCF, including Program Milestones, validated by the ICF Program Director. 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 High Energy Density (HED) program of work on the major HED facilities. The planned program of work is derived from the PCF. The Councils establish their experimental campaign plans in support of the key performance indicators above, and are further supported through the milestones documented in the ICF and Science Program Implementation Plans.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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"	71 % cumulative reduction in the use of calibration "knobs"
Result	**Not Met** - 41	**Met** - 44	**Met** - 46	**Met** - 53	**Met** - 60	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.						
Commentary on 2017 Results (Action Plan if Not Met)	Achieved the FY2017 annual target of 60% cumulative percentage reduction in the use of calibration “knobs” to successfully simulate nuclear weapons performance. Year End accomplishments include: Level two milestones (sourced in the ASC FY 2017 Implementation Plan, Version 1, pages 14-16) used to evaluate and track progress, were completed by the end of FY 2017. 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. The methodology used is described in the Laboratory reports and includes systematic validation and verification assessments to support the conclusions of the reports.						

Advanced Manufacturing Development

Program	Advanced Manufacturing Development						
Performance Goal (Measure)	**Component Manufacturing Development** - Complete maturation of production technologies and manufacturing capabilities to support Directed Stockpile Work, nuclear weapons refurbishment, and assessment activities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	5 deliverables	5 deliverables	6 deliverables	5 deliverables	6 deliverables	5 deliverables	5 deliverables
Result	**Exceeded** - 6	**Met** - 5	**Met** - 6	**Met** - 5	**Met** - 6	TBD	TBD
Endpoint Target	Annually complete deliverables required to mature production technologies and manufacturing capabilities until last nuclear weapon system in the stockpile is dismantled.						
Commentary on 2017 Results (Action Plan if Not Met)	The program met the annual target for FY 2017. Accomplishments include: Synthesis and formulation at the pilot scale for Insensitive High Explosives (IHE). The B61-12 and the W80-4 Life Extension Program (LEP) leveraged the findings from this work to characterize engineering and physics performance characterization of the IHE related to the variables in the manufacturing process; Successfully additively manufactured a polymer component for potential insertion in the W80-4 LEP and additively manufactured a full length metal lattice, documenting the process characteristics to support future production plant use; Lawrence Livermore National Laboratory's (LLNL) contributions to understanding the process parameters for additive manufacturing will allow the national security enterprise to start overcoming challenges associated with qualifying and certifying the additive manufacturing process and the components manufactured via that process for potential insertion into current and future weapon systems; Delivered earlier than expected with respect to their grading criteria, Sandia National Laboratory (SNL) completed the heterojunction bipolar transistor (HBT) back-end process development and documentation for Process Prove In (PPI) and Qualification Engineering Release (QER) three months ahead of schedule. Additionally, SNL completed their capacity modeling ahead of schedule, resulting in a cost avoidance of approximately $17.6 million. The W88 Alt 370 directly leveraged this work, which will reduce schedule risks, and therefore avoid lifecycle costs, when building the Arming, Fuzing, and Firing (AF&F) units for the program; Documented results from multiple interim milestones related to manufacturing process improvements, implementation of advanced manufacturing methodologies on the production floor, and establishing new consortiums focused around large data management in a digital manufacturing environment.						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	90 % of projects	90 % of projects	90 % of projects	90 % of projects	90 % of projects	90 % of projects	N/A
Result	**Met** - 90	**Met** - 90	**Met** – 90	**Not Met** - 60	**Not Met** - 89	TBD	N/A
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 2017 Results (Action Plan if Not Met)	Eight of the nine projects funded under Weapons Activities Infrastructure and Operations account are within both the CPI and SPI limits as measured against the overall Total Project Cost (TPC) and Critical Decision 4 (CD-4) dates in their approved Performance Baselines (PB). All nine projects are within the cost performance index (CPI) as measured against their approved Performance Baseline Total Project Costs: (1) Radioactive Liquid Waste Treatment Facility Upgrade Project Low Level Waste, (2) Chemistry and Metallurgy Research Replacement (CMRR) Radiological Laboratory Utility Office Building (RLUOB) Equipment Installation, Phase 2, (3) CMRR PF-4 Equipment Installation, Phase 1, (4) Uranium Processing Facility (UPF) Site Infrastructure and Services, (5) Substation Replacement at TA-3, (6) UPF Mechanical Electrical Building Subproject, (7) UPF Substation, (8) TA-55 Infrastructure Reinvestment, Phase II, Phase C, and (9) Transuranic (TRU) Waste Facilities, Phase B, Staging and Characterization Facility. The Substation Replacement at TA-3 project is at risk of not achieving its PB CD-4 date of September 2018 because of issues with design completion. In particular review and acceptance of the design is taking longer than planned and receipt of equipment is being delayed by impacts of disaster response following recent natural disasters, in particular the hurricanes that impacted the U.S. in 2017. The TA-3 Substation project is being conducted via the U.S. Army Corps of Engineers as NNSA's owner's agent using firm fixed price contracting. Cost performance ($28M Performance Baseline) is not at risk. The TRU Waste Facilities, Phase B, Staging and Characterization Facility project was completed (achieved CD-4) during the 4th quarter under budget (~$1M) and ahead of schedule (4 months). Note: this measure will be changed to the “Major System Construction Projects” Measure in 2019. **Action Plan:** The TA-3 Substation project is exploring ways to reduce the overall time to review and accept design deliverables so that construction can be completed in time to meet the September 2018 CD-4 milestone.						
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. Project Directors and project support personnel interrogate the management systems (e.g. EVM) and data produced from them to ensure accuracy.						

Program	Infrastructure and Operations						
Performance Goal (Measure)	**Major System Construction Projects** - Execute Major System Projects within approved costs and schedules, as measured by the total percentage of sub-projects that are part of projects with a total project cost (TPC) greater than $750 million with a cost performance index (ratio of budgeted cost of work performed to actual cost of work performed) between 0.9 and 1.15. Cost performance is measured against the original approved performance baseline (approved at Critical Decision 2).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	90 % of projects
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Annually achieve 90% of baselined construction projects with TPC greater than $750M with actual CPI of 0.9-1.15 as measured against approved baseline definitions.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Exceeded the annual target of 95% in the 4th quarter. Realized 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	Resource Conservation and Recovery Act (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 preventive maintenance (PM) spending vs total maintenance (TM)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	40 % PM conducted	35 % PM conducted	36 % PM conducted	36.5 % PM conducted
Result	N/A	N/A	N/A	**Not Met** - 34	**Met** - 35	TBD	TBD
Endpoint Target	PM to TM target is 50%						
Commentary on 2017 Results (Action Plan if Not Met)	The cumulative ratio of Preventive Maintenance (PM) against Total Maintenance through FY 2017 is 35%. This is an important measure of the trend of PM, A higher ratio of PM to TM indicates risks are being prevented before they are realized and corrective maintenance requirements are being avoided.						
Documentation, Limitations, Methodology, Validation, and Verification	Monthly costs reported in the G2 program management system.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	95 % availability	85 % availability	85 % of availability	85 % of availability	85 % of availability	85 % of availability
Result	N/A	**Exceeded** - 98	**Exceeded** - 98.6	**Exceeded** - 98	**Exceeded** - 97.6	TBD	TBD
Endpoint Target	Mission critical and mission dependent facilities are available at least 85% of scheduled days annually.						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded target of 85% of facilities available for operations in FY 2017. Mission critical and mission dependent facilities were available 97.6% of the scheduled days in FY 2017. This result is important because it demonstrates operational effectiveness and efficiency of mission critical and mission dependent facilities.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly Facility Availability Report, by site						

Program	Infrastructure and Operations						
Performance Goal (Measure)	**Recapitalization** - Percentage of NNSA assets rated as adequate (by Replacement Plant Value)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	39 % of assets	37 % of assets	35.5 % of assets	36 % of assets
Result	N/A	N/A	N/A	**Not Met** - 37	**Not Met** - 35	TBD	TBD
Endpoint Target	44% of NNSA assets rated as adequate						
Commentary on 2017 Results (Action Plan if Not Met)	In FY 2017, 35% of NNSA's assets rated as adequate, slightly below the annual target of 37%. Since that FY 2017 target was established, NNSA has matured and improved the risk-based processes used to prioritize investment decisions. Although NNSA did not achieve the 37% target at FY 2017 year end, the new approaches have allowed NNSA's Office of Safety, Infrastructure, and Operations to prioritize projects with a high probability of improving facility condition. As of February 2018, 37% of NNSA's assets are rated as adequate. The Recapitalization measure is important for conveying the condition of facilities and impact of focused recapitalization investments. **Action Plan:** NNSA will complete Deep Dive meetings to review plans at each laboratory on a biannual basis to evaluate and improve implementation of infrastructure projects. One of the key components of this new process is the preparation and planning that each site needs to perform to identify and determine appropriate solutions to their highest risks.						
Documentation, Limitations, Methodology, Validation, and Verification	Facilities Information Management System (FIMS) query. DOE's corporate database for real property as required by DOE Order 430.1C Real Property Asset Management						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	The Program has achieved the Year End Annual Target of 100% Safe and Secure Shipments. All shipments during FY2017 were completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material. Accomplishment for the year includes: an on-time annual delivery rate of 100%, exceeding the STA goal of 90%. This result is important because it indicates mission accomplishment, especially in light of the increased risks and threats to the Nuclear Security Enterprise.						
Documentation, Limitations, Methodology, Validation, and Verification	Certification from the senior Program Manager for Mission Operations that there are no known internal or external reports of any compromise or loss; absence of any DOE Occurrence Reporting and Processing System (ORPS) reports related to shipments; supporting milestones for the performance measure are documented and maintained by the Program. Official justification are contained internally within program secondary documents to include: Office of Mission Operations Manager Certification Memo, On Time Delivery Quarterly Report, On Board Agent Availability Report, and a Level II Milestone Report.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	90 % index	90 % index	90 % index	90 % index	95 % index	N/A
Result	N/A	**Met** - 90	**Met** - 90	**Met** - 90	**Met** - 90	TBD	N/A
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 2017 Results (Action Plan if Not Met)	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. The Enterprise Security Risk Management Project Plan name was changed due to a conflict with the DOE Risk Management program. The new name is the Enterprise Safeguards and Security Planning and Analysis Program (E-SSPAP). The project plan was updated to reflect recent changes to the DOE Threat Policy and to better align with vulnerability assessments and security 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. The NNSA E-SSPAP Supplemental Directive (SD) and Field Manual (FM) have been developed and a final review was conducted in February 2017. A senior leadership briefing was completed in March 2017 to move the program to its final review and approval process. The Supplemental Directive and Field Manual were combined into one single document. NNSA Policy required the FM to be combined with the SD as a contractor requirement document attachments. These changes were completed along with a technical editing review. The SD was sent out for review by NNSA policy and all changes and recommendations were due September 26, 2017. The remaining 10% of this project will be accomplished when the E-SSPAP Supplemental Directive is signed by the NNSA Administrator which is tentatively scheduled for FY18.						
Documentation, Limitations, Methodology, Validation, and Verification	Enterprise Safeguards and Security Planning and Analysis Program. The E-SSPAP Project Plan outlines the process and steps necessary for the contractor to meet the requirements. The Field Office reviewed the M&O input and validated completion of the steps prior to submitting to the Program Office—DNS.						

Program	Defense Nuclear Security						
Performance Goal (Measure)	**Enterprise Safeguards & Security Planning & Analysis Program** - Implement, mature, and expand the E-SSPAP in order to drive a standardized effective, efficient, and sustainable field nuclear security program.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	90 % index
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	By 2021, 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 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	85 % index	85 % index	90 % index	90 % index	95 % index	N/A
Result	N/A	**Exceeded** - 100	**Met** - 85	**Met** - 90	**Met** - 90	TBD	N/A
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 2017 Results (Action Plan if Not Met)	NNSA has achieved 100% of 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. 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. The NNSA 10-Year Physical Security Systems Refresh Plan was signed by the NNSA Administrator and delivered to Congress in August of 2017. This plan prioritizes security infrastructure lifecycle needs across the NNSA nuclear security enterprise over the next ten years. Standard lifecycle refreshes are scheduled on a reoccurring basis and incorporated into the FYNSP process. Additionally, the Center for Security Technology, Analysis, Response and Testing (CSTART) has initiated the design effort of the Security Infrastructure Revitalization Program (SIRP). This effort is focused on the recapitalization of security infrastructure replacements and upgrades, which are outlined in the 10-Year plan. The Y-12 West End Protected Area Reduction Project at Y-12 has an approved Critical Decision 0 and is currently conducting an analysis of alternatives required by line item construction projects. The Argus Program has established a parts depot to service NNSA sites using Argus equipment. Life cycle upgrades to the Argus system are also annotated in the LLNL Security & Protection annual operating plan.						
Documentation, Limitations, Methodology, Validation, and Verification	Physical Security Supplemental Project Plan, Site Visit Reports, Physical Security Supplemental quarterly and annual reports. The DNS Ten Year Plan is the comprehensive list of site infrastructure projects at the enterprise level. Each site develops project plans for its individual projects and submits detailed reports via the Field Office to Defense Nuclear Security. This is then integrated into a master, prioritized list. The project plans include cost, scope and schedule estimates IAW DOE Order 413.3 to be validated.						

Program	Defense Nuclear Security						
Performance Goal (Measure)	**Protective Force Law Enforcement First Responder** - Tactical Casualty Care (LEFR-TCC) Program Implementation - Implement and sustain a LEFR-TCC program for protective forces at all eight NNSA sites.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	90 % index
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	By FY 2021, implement a standardized LEFR-TCC program in which 95% of uniformed protective force personnel and instructors are trained at the user level, maintaining 95% thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	90 % index	90 % index	90 % index	90 % index	95 % index	N/A
Result	N/A	**Exceeded** - 100	**Met** - 90	**Met** - 90	**Met** - 90	TBD	N/A
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 2017 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 6.0 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. 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. The M&O prepares and submits the report to the Field Office, who verifies and submits to DNS.						

Program	Defense Nuclear Security						
Performance Goal (Measure)	**Security Infrastructure Revitalization Program (SIRP)** - Implement, mature, and standardize systems in order to drive an effective, efficient, and sustainable NNSA nuclear security program. This will ensure repeatable and defensible approaches to nuclear security across the broader nuclear security enterprise process for conducting site vulnerability and risk assessments and provide a set of consistent deliverables to help Federal oversight ensure the security program is integrated, robust, and efficient.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	80 % index
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	By 2023, achieve defensible prioritization of systems investments based on risk, 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 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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 or the NA-IM Assessment Team that resulted in the rating of "effective."						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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	N/A
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Not Met** - 50	**Met** - 100	TBD	N/A
Endpoint Target	Annually, achieve at least an "effective" rating of 100% of NNSA OCIO Site Assistance Visit (SAV) Cybersecurity reviews.						
Commentary on 2017 Results (Action Plan if Not Met)	Achieved the annual target of 100% of the Cybersecurity Site Assessment Reviews rated effective by NNSA, based upon EA's independent assessment reports. EA completed one site assessment this FY. The assessment was of the classified cyber security programs at the Lawrence Livermore National (LLNL) Laboratory. Although EA's assessment identified 3 deficiencies, NNSA concluded that the overall state of LLNL's cybersecurity programs were effective. This result is important because these reviews provide the NNSA OCIO with evidence of the health and status of each site's Cyber Security Program, identify issues in the Cyber Security Program that may require corporate actions, and identify NNSA OCIO focus areas to improve Cyber Security Program.						
Documentation, Limitations, Methodology, Validation, and Verification	EA Site Assessment Review Report: Independent Assessment of the Classified Cyber Security Program at the Lawrence Livermore National Laboratory, January 2017 (OUO)						

Program	NNSA IT and Cybersecurity						
Performance Goal (Measure)	**Cybersecurity Program Execution Guidance (PEG)** - Annual percentage of performance evaluations of NNSA sites measured against the Objectives and Key Outcomes set forth in FY PEG resulting in the rating of "satisfactory or better" as defined by FAR 16.401 c(3).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	100 % of performance evaluations of NNSA sites resulting in at least a "Satisfactory" rating or better per FAR 16.401 c(3)
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Annually, achieve at least a satisfactory rating of 100% of site performance evaluations of FY PEG implementation.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Defense Nuclear Nonproliferation

Material Management and Minimization (M3)

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	88 facilities	92 facilities	94 facilities	98 facilities	101 facilities	103 facilities	106 facilities
Result	**Met** - 88	**Met** - 92	**Met** - 94	**Not Met** - 97	**Not Met** - 100	TBD	TBD
Endpoint Target	By 2035, convert or verify the shutdown prior to conversion of 156 HEU reactors and isotope production facilities.						
Commentary on 2017 Results (Action Plan if Not Met)	Did not achieve the annual target of converting or verifying as shutdown 4 facilities in FY 2017. Through September, Material Management and Minimization (M3) converted or verified as shutdown 3 facilities in FY 2017. The annual target was missed due to China's unwillingness to sign the Project and Supply Agreement (PSA) with the International Atomic Energy Agency (IAEA) and Nigeria. Nigeria's Miniature Neutron Source Reactor (MNSR) was not converted to low enriched uranium (LEU) fuel due to the lack of a PSA. **Action Plan:** The program has been working with China and urging them to sign the PSA but China has steadfastly refused to do so. Without this agreement, the LEU fuel cannot be sent to Nigeria for the conversion. The program completed the Ghana conversion in July 2017. In parallel, the program will push China to sign a contract permitting criticality testing of the LEU core and convert Nigeria's MNSR in FY 2018.						
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 M3 federal/laboratory staff providing visual confirmation.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	3,835 kg	5,207 kg	5,332 kilograms	6,055 kilograms	6,285 kilograms	6,499 kilograms	6,594 kilograms
Result	**Exceeded** - 5,017	**Met** - 5,207	**Exceeded** - 5,376.7	**Exceeded** - 6,104.8	**Exceeded** - 6,372.9	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 2017 Results (Action Plan if Not Met)	Exceeded the annual target by removing or disposing 6,372.9 kg of vulnerable nuclear material. Through September, M3 accomplished 41 successful shipments totaling 268.1 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 (B-21 - B-27) Secured Transportation Services Bill of Lading (Alberta Slowpoke BOLs) CNL Bill of Lading (G-8 - G-17) Volga Dnepr Airlines Air Waybill, dated 27 August, 2017 Volga Dnepr Airlines Air Waybill, dated 11 July, 2017 Volga Dnepr Airlines Air Waybill, dated 17 August, 2017 Volga Dnepr Airlines Air Waybill, dated 19 September, 2017 Shippers Declaration for Dangerous Goods, dated 5 September, 2017						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	143 MT	146 MT	150 MT	153 MT	157 MT	160 MT	162 MT
Result	**Exceeded** - 143.8	**Exceeded** - 146.3	**Met** - 150	**Exceeded** - 154.3	**Exceeded** - 157.9	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, disposition paths for weapons containing HEU, etc.						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded the annual target of 157 MT down-blended or shipped for down-blending. Through September M3 has dispositioned a cumulative total of 157.9 MT of HEU. This result is important because it is contributing to the Department's nonproliferation goal of disposing of surplus U.S. HEU.						
Documentation, Limitations, Methodology, Validation, and Verification	Y-12 contractor monthly program status documents - end of September 2017 allocations spreadsheet demonstrated 157.9 MT HEU down-blended or shipped for down-blending. 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.						

Program	Material Management and Minimization						
Performance Goal (Measure)	**U.S. Surplus Plutonium Disposition** - Cumulative kilograms (kg) of plutonium metal converted to oxide in preparation for final disposition.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	767 kg	867 kg	967 kg
Result	N/A	N/A	N/A	N/A	**Not Met** - 688.6	TBD	TBD
Endpoint Target	By FY 2028, convert 2 MT (2000 kg) of surplus plutonium to oxide.						
Commentary on 2017 Results (Action Plan if Not Met)	Did not achieve the annual target of converting 100kg of plutonium metal to oxide. Through September, M3 has converted a cumulative total of 688.6 kg of plutonium metal to oxide. The target was missed due to shipping violations which resulted in the suspension of sample shipments. LANL converted approximately 100 kg of plutonium metal to oxide during FY 2017 as planned; however, shipments of samples necessary to complete analysis for certification of the 100 kg of oxide product were delayed. The 2017 result takes credit for cumulative plutonium oxide produced at SRS HB-Line facility in preparation for final disposition. Since this target was missed, LANL will recover the schedule and the cumulative target will be recovered in FY 2018. This result is important because it demonstrates progress towards the Department's goal of disposing of at least 34 metric tons of surplus U.S. weapon-grade plutonium. **Action Plan:** LANL will continue to produce plutonium oxide as planned in FY 2018. LANL will apply for shipping privileges under an exemption in order to ship oxide samples for analysis. LANL should recover the schedule by mid-2018. No impact is anticipated to the FY 2018 cumulative target.						
Documentation, Limitations, Methodology, Validation, and Verification	Correspondence documenting contractor acceptance of certified plutonium oxide. LANL Biweekly and Monthly reports providing production updates. Email from LANL representative confirming production amounts. Savannah River Nuclear Solutions letters to NNSA documenting quantity and quality of plutonium oxide produced in HB-Line.						

Global Material Security

Program	Global Material Security						
Performance Goal (Measure)	**Mobile Detection System (MDS)** - Cumulative number of Mobile Detection Systems (MDS) deployed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	72 MDS	97 MDS	117 MDS	137 MDS	157 MDS	167 MDS
Result	N/A	**Exceeded** - 76	**Not Met** - 96	**Met** - 117	**Exceeded** - 143	TBD	TBD
Endpoint Target	By the end of FY 2019, deploy 167 Mobile Detection Systems.						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded the FY 2017 cumulative target of 137 Mobile Detection Systems (MDS) by deploying 26 MDS. The total cumulative number of MDS deployed as of the end of Q4 FY 2017 is 143 units to 28 countries. Nuclear Smuggling Detection and Deterrence's (NSDD) 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	Design, Project Schedules, trip reports, Final Inspection Testing documentation performed by NSDD representatives (Federal Country Manager or their delegate) to validate that MDS equipment meets contractual requirements.						

Program	Global Material Security						
Performance Goal (Measure)	**Radiological Buildings Protected** - Cumulative number of buildings with high-priority radiological materials secured.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	1,603 buildings	1,785 buildings	1,890 buildings	2,027 buildings	2,116 buildings	2,266 buildings	2,346 buildings
Result	**Exceeded** - 1,674	**Exceeded** - 1,816	**Exceeded** - 1,958	**Exceeded** - 2,100	**Exceeded** - 2,196	TBD	TBD
Endpoint Target	4,394 buildings secured by 2033						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded the cumulative target of 2,116 buildings protected with high priority nuclear and radiological materials secured for FY 2017 by securing 47 international buildings and 49 domestic buildings. The cumulative total is 2,196. 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	Global Material Security's Office of Radiological Security's (ORS) monthly performance reports, ORS Implementation Guidelines, ORS Program Management Plan.						

Program	Global Material Security						
Performance Goal (Measure)	**Sites** - Cumulative number of sites with radiation detection systems deployed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	513 sites (45 Megaports)	548 sites/ports	575 cumulative sites	599 cumulative sites	618 cumulative sites	634 cumulative sites	639 cumulative sites
Result	**Met** - 513	**Exceeded** - 550	**Met** - 575	**Exceeded** - 606	**Exceeded** - 636	TBD	TBD
Endpoint Target	By the end of FY 2019, provide radiation detection systems to approximately 639 cumulative sites.						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded the FY 2017 cumulative target of 618 sites with radiation detection equipment by deploying equipment to 30 sites. The total cumulative number of sites with radiation detection equipment installed as of the end of Q4 FY 2017 is 636. 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	Design, Project Schedules, trip reports, Final Inspection/Acceptance Testing documentation performed by Nuclear Smuggling Detection and Deterrence representatives (Federal Country Manager or their delegate) to validate that equipment meets contractual requirements. NSDD considers a deployment complete following testing to verify that the system is operating as intended and that all contractual requirements have been met. Prior to the start of host country use of the system, NSDD also completes operator and maintenance training, so that the host country is ready to properly use and maintain their systems.						

Program	Global Material Security						
Performance Goal (Measure)	**Sustainability** - Cumulative number of radiation detection systems that are being indigenously sustained.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	431 sites/ports	490 cumulative radiation detection systems	558 cumulative radiation detection systems	620 cumulative radiation detection systems	684 cumulative radiation detection systems	741 cumulative radiation detection systems
Result	N/A	**Not Met** - 412	**Not Met** - 488	**Not Met** - 538	**Exceeded** - 630	TBD	TBD
Endpoint Target	By the end of FY 2020, transfer 786 radiation detection systems to indigenous sustainment.						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded the FY 2017 metric target of 620 systems being indigenously sustained with 92 additional sites being indigenously sustained in FY 2017. The total cumulative number of sites in indigenous sustainment as of the end of FY 2017 is 630. These host governments are now sustaining sites' capacity to detect, deter, and interdict illicit trafficking of nuclear and other radioactive materials. This work is important because it demonstrates that Nuclear Smuggling Detection and Deterrence (NSDD) is successfully transitioning sites to host government responsibility.						
Documentation, Limitations, Methodology, Validation, and Verification	Schedules, trip reports, joint transition and sustainability plans. Country managers provide the trip reports and planning documents to management and a team responsible for tracking and validating NSDD metric information. NSDD has a standard process to determine that a site or MDS has transitioned to partner country responsibility. For a site to transition, a partner must assume responsibility for system (1) operations and management, (2) training, and (3) maintenance. The steps a partner must take to assume responsibility for these 3 areas are documented in a Joint Action Plan. Partner country progress in these 3 areas is documented quarterly in a "Stoplight Chart."						

Nonproliferation and Arms Control

Program	Nonproliferation and Arms Control						
Performance Goal (Measure)	**Export Control Review & Compliance/Interdiction Program (ECRC/I)** - Submit initial DOE positions on dual-use export license applications to DOC within 25 days of receipt.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	80 %
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Achieve an annual success rate of at least 85% or greater of all initial DOE positions on dual-use export license applications submitted to the Department of Commerce within 25 days of receipt (i.e., 5 days fewer than required).						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	31 countries	34 countries	35 countries	36 countries	37 countries	38 countries	N/A
Result	**Met** - 31	**Met** - 34	**Met** - 35	**Met** - 36	**Met** - 37	TBD	N/A
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 2017 Results (Action Plan if Not Met)	Met FY 2017 target of 37 countries that meet critical export control system requirements. This number is derived from a review of updates to engagement plans and after action reports for countries in which INECP is active. This result is important because it documents the success of the program helping foreign partners build export control capacity and prevent the spread of WMD-related materials, equipment, and technology. In FY 2019, the INECP performance metric will change as the program has identified a more qualitative and quantitative metric.						
Documentation, Limitations, Methodology, Validation, and Verification	International Nuclear Export Control program database records and original input documents; INECP engagement plans and After Action Reports. The plans contain a scoring matrix which is used to evaluate a country's progress. The matrix was developed by INECP's export control technical experts and contains a scoring guide to provide uniformity in scores between countries. The "After Action Reports" are summary documents written by the country lab lead and HQ lead following a workshop. It discusses event key issues and observations, outcomes/impact on country planning, and next steps.						

Program	Nonproliferation and Arms Control						
Performance Goal (Measure)	**Reduce Nuclear Terrorism Threat** - Evaluate the adequacy of existing physical security measures of U.S. obligated nuclear material located at foreign facilities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	6 assessments	6 assessments	6 assessments	6 assessments	6 assessments	6 assessments
Result	N/A	**Met** - 6	**Met** - 6	**Exceeded** - 7	**Exceeded** - 8	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 2017 Results (Action Plan if Not Met)	Completed eight bilateral physical protection security assessment reviews of foreign facilities holding U.S.-obligated nuclear material, exceeding the FY 2017 target of six. 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	DOE/NNSA Physical Protection Site Assessment database records and official reports; Bi-lateral Physical Protection Reports developed and finalized in cooperation with U.S. interagency partners, including the Department of State, the Nuclear Regulatory Commission, and the Department of Defense, to document the results of completed physical protection security assessment reviews of foreign facilities holding U.S.-obligated nuclear material.						

Program	Nonproliferation and Arms Control						
Performance Goal (Measure)	**Safeguards Tools** - Transfer tools to international regimes and other countries to address identified safeguards deficiencies.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	5 systems	5 systems	5 systems	5 tools	5 tools	5 tools	5 tools
Result	**Met** - 5	**Met** - 5	**Met** - 5	**Met** - 5	**Exceeded** - 7	TBD	TBD
Endpoint Target	Annually transfer tools to international regimes and other countries to address identified safeguards deficiencies.						
Commentary on 2017 Results (Action Plan if Not Met)	Exceeded FY 17 target of 5 technology transfers by completing a total of 7 transfers. The following technologies were transferred to the International Atomic Energy Agency (IAEA): Cross Section data for 19F and the Acquisition Path Analysis Too – medium resolution gamma spectraanalyzed by an upgraded version of FRAM software – the Coincidence Counter Signal Splitters. Passive Gamma Emission Tomography (PGET) MCNP code and the Inverse Depletion Theory (INDEPTH) development for environmental sampling analysis. One technology was transferred to the European Commission's Joint Research Centre (JRC) - Ispra: KM200 preamplifiers. This result is important because the tool transfers will allow partners to more effectively and efficiently account for and control nuclear materials, and help ensure complete and correct reporting to the IAEA.						
Documentation, Limitations, Methodology, Validation, and Verification	Shipping records; technical reports prepared by laboratory subject matter experts and submitted to NNSA/NPAC staff; e-mails confirming receipt; photographs.						

Defense Nuclear Nonproliferation Research and Development

Program	Defense Nuclear Nonproliferation Research and Development						
Performance Goal (Measure)	**Early Proliferation Detection** - Demonstrate advancements in material production and weaponization detection by achieving the baseline Technology Readiness Level (TRL) targets at project completion, as set in those projects' Life Cycle Plans.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	80 % of completed projects
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Annually, achieve baseline TRL targets on 80% of completing projects.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Achieved the FY 2017 delivery of nuclear detonation detection sensor payloads in accordance with current US Air Force published schedule for satellite production. Progress tracked with planned milestones for FY 2017 payload delivery; in particular, delivery of payload Global Burst Detector III-6 in Q1 meeting a January 2017 need date, and delivery of payload Global Burst Detector III-7 in Q3 meeting a June 2017 need date. These results are important because they maintain U.S. National capability to monitor the Earth for nuclear detonations.						
Documentation, Limitations, Methodology, Validation, and Verification	DOE/NNSA generates a memo documenting the readiness of a satellite payload, for final delivery to the USAF, and receipt is documented in a DD 1149 Shipping and Receiving Form. Quality of data monitored by NNSA, USAF, performers, and technical stakeholders through series of program and technical reviews. Timeliness of deliveries is measured against a schedule that is negotiated between NNSA and USAF for phased integration into operational systems.						

Program	Defense Nuclear Nonproliferation Research and Development						
Performance Goal (Measure)	**Nuclear Security** - Demonstrate advancements in nuclear weapons and material security by achieving the baseline Technology Readiness Level (TRL) targets at project completion, as set in those projects' Life Cycle Plans.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	80 % of completed projects
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Annually, achieve baseline TRL targets on 80% of completing projects.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	20 % progress	50 % of progress	70 % of progress	90 % of progress	100 % of progress	N/A
Result	N/A	**Met** - 20	**Met** - 50	**Met** - 70	**Met** - 90	TBD	N/A
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 2017 Results (Action Plan if Not Met)	Achieved the cumulative target of 90% progress. This percentage correlates to meeting the targeted TRL goals as specified in the Nuclear Material Production Detection Roadmap's investment strategy for each of 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: Technology Readiness Levels (TRL) are assessed and proposed initially by the laboratories for each project and certified by DNN R&D and documented in DNN R&D's Web-based Project Management Information System. DNN R&D then makes an overall TRL assessment for each of the 12 separate requirements in the Roadmap. The percentage is then determined based on the number of requirements (out of 12) meeting the targeted TRL outlined in the Roadmap.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	20 % progress	50 % progress	70 % of progress	90 % of progress	100 % of progress	N/A
Result	N/A	**Met** - 20	**Met** - 50	**Met** - 70	**Met** - 90	TBD	N/A
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 2017 Results (Action Plan if Not Met)	Achieved the cumulative target of 90% progress. This percentage correlates to meeting the targeted technology readiness level (TRL) goal as specified in the Nuclear Weapons and Material Security Roadmap's investment strategy for each of 18 separate requirements. This result is important because it advances U.S. technical capabilities in support of nuclear counter terrorism and incident response and to detect, characterize, and monitor the foreign development of nuclear weapons.						
Documentation, Limitations, Methodology, Validation, and Verification	Program Plan/Roadmap document; Technology Readiness Levels (TRL) are assessed and proposed initially by the laboratories for each project and certified by DNN R&D and documented in DNN R&D's Web-based Project Management Information System. DNN R&D then makes an overall TRL assessment for each of the 18 separate requirements in the Roadmap. The percentage is then determined based on the number of requirements (out of 18) meeting the targeted TRL outlined in the Roadmap.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	81 % completed	90 % completed	TBD	TBD	N/A	N/A	N/A
Result	**Not Met** - 60	**Not Met** - 71.3	**Data Not Available**	**Data Not Available**	N/A	N/A	N/A
Endpoint Target	Performance measure targets will be adjusted to reflect the decision of the path forward for plutonium disposition.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Nonproliferation Construction						
Performance Goal (Measure)	**Surplus Plutonium Disposition (SPD) Project** - Complete the design, construction, and cold start-up activities for the Surplus Plutonium Disposition (SPD) project.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	Complete Critical Decision (CD) – 1, Approve Alternative Selection	Complete 35% of detailed design; Complete 100% final design for long lead procurements, site preparation, and security modifications.
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	By the end of FY 2027, complete design, construction, and cold start-up activities for the SPD project.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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 annual percentage of Defense Nuclear Facility (DNF) sites in full compliance with DOE Order 151.1D.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	75%	80 %	N/A
Result	N/A	N/A	N/A	N/A	**Met** – 75%	TBD	TBD
Endpoint Target	Maintain an annual rate of 95% of DNF sites in full compliance with DOE O 151.1D.						
Commentary on 2017 Results (Action Plan if Not Met)	The program has met the projected target of seventy five percent of DOE Sites in compliance with implementation of DOE Order 151.1D. DOE Order 151.1D was issued in August 2016, and sites had one year for implementation from the issuance date. Sites and facilities proactively executed the necessary modifications and revisions to their respective programs in order to meet the established implementation date of DOE 151.1D requirements. The active implementation and integration of requirements established in the Directive are in-line with the overall goal of improving and sustaining a high degree of competency of emergency management programs throughout the complex.						
Comment	Note: The FY 2018 target reported for EOCR in the FY 2018 Budget Request as well as the "Fiscal Year (FY) 2016 DOE Annual Performance Report / FY 2018 Annual Performance Plan" was an error. The FY 2018 Request level target should have been reported as 80%, with 95% compliance rate to be achieved by FY 2021 and sustained thereafter. However since implementing this measure, DOE/NNSA considers the new Response Support Coordination Team Readiness measure beginning in FY 2019 to be more appropriate to the Continuity of Operations mission clearly showing DOE's response capability to all-hazards emergencies, incidents, and events. The EOCR measure will be discontinued after FY 2018 and replaced with the Response Support Coordination Team Readiness measure through FY 2023.						
Documentation, Limitations, Methodology, Validation, and Verification	Defense Nuclear Facilities Safety Board Recommendation (DNFSB) 2014-I; Realignment and reorganization of Associate Administrator Emergency Operations and Associate Administrator Counterterrorism and Counterproliferation approved by NNSA Administrator in November 2015. DOE Order 151.1 D Comprehensive Emergency Management System, approved August 11, 2016; DOE/NNSA provided the DNFSB with quarterly reports on the implementation status of DOE 0 151.1 D, development of Emergency Management Guides, and applicable training; annual HQ DOE/NNSA exercise in December 2016 to validate Emergency Management training proficiency and ability to respond to an all-hazard incident effecting department equities; measure proficiency of Emergency Management Enterprise from three DNFSB site drills/exercises. Respective line management of DOE/NNSA complex sites and facilities provided quarterly reports on training guidance and policy implementation; deficiencies and corrective actions; and Defense Nuclear Facility training in Threat and Hazard Identification and Risk Assessment (THIRA). Performance metrics, validation, and verification of actions were provided to DOE/NNSA headquarters through formalized Performance Evaluation Plans and Reports and independent oversight and assessments of the respective emergency management programs.						

Program	Nuclear Counterterrorism and Incident Response Program						
Performance Goal (Measure)	**Incident Response Readiness Index (IRRI)** - Annual overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	91 IRRI	91 IRRI	91 IRRI
Result	N/A	N/A	N/A	N/A	**Not Met** - 89	TBD	TBD
Endpoint Target	Annually, maintain a Readiness Index of 91 or higher.						
Commentary on 2017 Results (Action Plan if Not Met)	The Office of Nuclear Incident Response did not reach the target 91 Readiness level for FY 2017. The office has missed the target due to inadequate personnel availability, training deficiencies, equipment shortages, and maintenance issues. With respect to the Emergency Response Aerial Measuring System (AMS), the increased frequency and duration of required maintenance due to the age of the aircraft are being actively managed. Also, one Radiological Assistance Program region has been without a reliable contract air service to assist in transport needs for emergency response rapid deployments. **Action Plan:** The Office of Nuclear Incident Response has increased training programs, equipment purchases, and maintenance, and has secured access to more personnel to support its missions. The Office is seeing improvements in readiness, which should continue through FY 2018. The FY 2019 proposal to recapitalize the AMS should also help improve readiness scores.						
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 our response efforts; Task Orders/Work Authorizations The index is calculated using multiple input values such as training currency, availability of required equipment/people/transportation. The individual scores across all of the programs are combined to provide the office index score. While there is a significant effort in developing the objective score, all of the variables cannot be captured and the individual program managers have the authority to change the objective number to match their observations subjectively. In the end, the subjective score, which is always the same or nearly the same as the objective score, is still greatly supported by the calculation effort. Every quarter the calculated score is reported to the Director of the Office of Nuclear Incident Response and the values are discussed. While the Director also retains the authority to slightly modify the objective score, any final rating score is supported by a huge calculation effort to score the individual readiness efforts with the entire office.						

Program	Nuclear Counterterrorism and Incident Response Program						
Performance Goal (Measure)	**Response Support Coordination Team Readiness** - Measures the readiness of three fully staffed and trained emergency operations response support coordination teams.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	1 team
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Three support coordination teams that are trained and prepared for immediate activation in support of DOE/NNSA complex wide/cascading emergencies, incidents, and events by FY 2022.						
Commentary on 2017 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	15% complete	35% complete	N/A	35% complete	50% complete	65% complete	75% complete
Result	**Met** - 15%	TBD	N/A	**Met** - 35%	**Met** - 50%	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.						
Commentary on 2017 Results (Action Plan if Not Met)	At the end of FY 2017, achieved 50% completion of TTMA-V target activities by: (1) Completing the analysis of the first experimental validation test series, and (2) Completing planning activities for the second experimental validation test series. This result is important because 50% completion in FY 2017 contributes to the overall goal of validating the national 3-D predictive modeling capability through 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.						
Documentation, Limitations, Methodology, Validation, and Verification	This effort has a multi-year program plan outlining activities and milestones. Performance is measured against the plans in this document.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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	N/A
Result	**Met** - 9,500	**Exceeded** - 10,280	**Met** - 11,000	**Met** - 11,700	**Exceeded** - 12,982	TBD	N/A
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 2017 Results (Action Plan if Not Met)	Fully achieved the FY target of training a cumulative 12,500 first responders, security, and WMD CT officials. Executed tabletop exercises with key domestic and international partners to train a cumulative total of 12,982 officials. 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.						
Comment	This performance measure is being replaced by the WMD Counterterrorism Expertise performance measure.						
Documentation, Limitations, Methodology, Validation, and Verification	Exercise Attendance Lists and After-Action Reports The metrics are compiled by the Office and retained in the after action reports required after each training.						

Program	Nuclear Counterterrorism and Incident Response Program						
Performance Goal (Measure)	**WMD Counterterrorism Expertise** - Percentage of responding Silent Thunder participants who report a solid understanding of the response requirements for a radiological incident at the completion of the exercise.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	70 %
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Annually maintain a percentage of 70% across all participants reporting a solid understanding at the strongly agree or agree level at the completion of the exercise on required survey.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	17 % complete	22 % complete	32 % complete	43 % complete	55 % complete	65 % complete	74 % complete
Result	**Exceeded** - 18.4	**Exceeded** - 25.7	**Exceeded**- 34.6	**Exceeded** - 45.3	**Exceeded**- 57.8	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).						
Commentary on 2017 Results (Action Plan if Not Met)	As of 9/30/2017, 57.8% of the COLUMBIA-class submarine reactor plant (S1B) has been completed. 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	Reporting Analysis of scheduled completion of major milestones including safety analysis and performance analysis reports, drawing deliverable performance to schedule, and cost performance to schedule.						

Energy Efficiency and Renewable Energy

Vehicle Technologies

Program	Vehicle Technologies						
Performance Goal (Measure)	**Batteries** - Reduce the cost of batteries for Electric Vehicles (EVs).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	$ 400 /kWh	$ 300 /kWh	$ 275 /kWh	$ 250 /kWh	$ 225 /kWh	$ 200 /kWh	$ 185 /kWh
Result	**Exceeded** - 325	**Met** - 289	**Exceeded** - 268	**Exceeded** - 245	**Exceeded** - 219	TBD	TBD
Endpoint Target	$100/kWh by 2028						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment							
Documentation, Limitations, Methodology, Validation, and Verification	The end of year result was announced on 10/23. https://energy.gov/eere/articles/energy-department-announces-15-million-batteries-and-electrification-enable-extreme. Results were determined through proprietary analysis completed with an industry partner.						

Program	Vehicle Technologies						
Performance Goal (Measure)	**Light Duty** - Improve Light Duty vehicle fuel economy (mpg) through increased engine efficiency.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	41.8 MPG	42.5 MPG
Result	N/A	N/A	36	40.3	41	TBD	TBD
Endpoint Target	48.6 MPG in 2030 (i.e., a 35% improvement in MPG vs. a 2015 baseline). 35% fuel economy improvement represents 25% from engine efficiency improvement assuming current fuels and an additional 10% from co-optimization with fuels.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Fuel economy improvement is compared to a modeled 2015 baseline vehicle with an unadjusted (CAFÉ) fuel economy of 36 MPG. None of the 2019 target will come from co-optimization with fuels, since this effort is still in its early stages. Calculation methodologies for baseline and target costs are found in the presentation Vehicle Energy Consumption Benefits of Low Temperature Combustion (LTC) Engines Historical trend data is shown in the results field above to provide context, even where no formal GPRA Target was published for that year.						
Documentation, Limitations, Methodology, Validation, and Verification	Internal presentation titled “Vehicle Energy Consumption Benefits of Low Temperature Combustion (LTC) Engines.”						

Program	Vehicle Technologies						
Performance Goal (Measure)	**Mobility** - Complete initial phase of the SMART Mobility National Laboratory Consortium by publishing a results report for each of the five research pillars.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	5 reports
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Increased productivity in transportation energy from new mobility concepts. A quantitative measure is under development and will be informed by the reports published in 2019.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Results Reports will describe the findings from the initial phase of the SMART Mobility Lab Consortium and identify the most promising research paths going forward for the following 5 pillars: Connected and Automated Vehicles, Mobility Decision Science, Urban Science, Advanced Fueling Infrastructure and Multimodal Transport. Future GPRA targets will show increased energy productivity from specific technologies and systems.						
Documentation, Limitations, Methodology, Validation, and Verification							

Bioenergy Technologies

Program	Bioenergy Technologies						
Performance Goal (Measure)	**Algae** - Increase algal biomass productivity.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	13.3 g/m2/day	15.9 g/m2/day
Result	N/A	N/A	8.5	9.1	10.3	TBD	TBD
Endpoint Target	At least 25 g/m2/day by 2025						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The FY 2018 baseline of 13.3 g/m2/day is a summer productivity that is often greater than the annual average. Algal biomass productivity targets and their relation to algal biofuel production cost improvements are detailed in the Bioenergy Technologies Office Multi-year Program Plan, at https://www.energy.gov/sites/prod/files/2016/07/f33/mypp_march2016.pdf (pages 2-49 to 2-56). With the establishment of the Algae Testbed Public-Private Partnership and a standardized data collection program, a state-of-technology for algal biomass productivity was conducted for the first time in 2015 for use in establishing and assessing Bioenergy Technologies Office technical targets. The algal biomass productivity calculations and methodologies are detailed in E. Knoshaug, L. M. L. Laurens, C. Kinchin, and R. Davis, Use of Cultivation Data from the Algae Testbed Public Private Partnership as Utilized in NREL's Algae State of Technology Assessments (Golden, CO: National Renewable Energy Laboratory, October 2016), NREL/TP-5100-67289, http://www.nrel.gov/docs/fy17osti/67289.pdf. Historical trend data is shown in the results field above to provide context, even where no formal GPRA Target was published for that year.						
Documentation, Limitations, Methodology, Validation, and Verification	NREL's Algae State of Technology Assessments (Golden, CO: National Renewable Energy Laboratory, October 2016), NREL/TP-5100-67289, http://www.nrel.gov/docs/fy17osti/67289.pdf.						

Program	Bioenergy Technologies						
Performance Goal (Measure)	**Pathways** - Decrease fuel selling price for the catalytic fast pyrolysis pathway.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	$4.09 /gge	$3.84 /gge
Result	N/A	N/A	5.76	5.19	4.34	TBD	TBD
Endpoint Target	Achieve a wholesale minimum fuel selling price (MFSP) of less than $3/gge by 2025.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	2017 Baseline: $4.34/gge. MFSP assumptions based on 2015 In Situ Ex Situ Catalytic Fast Pyrolysis Design Case (https://www.nrel.gov/docs/fy15osti/62455.pdf) published by NREL and subsequent State of Technology (FY 2017 Q4 milestone report by Abhijit Dutta). Dollar values are in 2014$. MFSP is defined as the fuel selling price (leaving the biorefinery gate) that enables a 10% rate of return over the lifetime of the biorefinery including capital costs, operating costs, and financing. This price does not include fuel marketing or distribution costs, nor does it include any retail markups. Full economic assumptions (e.g. plant lifetime, interest rates, etc.) can be found here: https://www.nrel.gov/docs/fy15osti/62455.pdf Catalytic fast pyrolysis of biomass is recognized as an efficient and feasible process to selectively convert lignocellulose into a liquid fuel—bio-oil. The main challenge of this process is the development of active and stable catalysts that can deal with a large variety of decomposition intermediates from lignocellulose. This cost reduction will be accomplished by optimizing catalyst composition and process conditions for the catalytic fast pyrolysis reactor system to improve carbon efficiency, reduce catalyst cost, and extend catalyst lifetime. Historical trend data is shown in the results field above to provide context, even where no formal GPRA Target was published for that year.							
Documentation, Limitations, Methodology, Validation, and Verification	https://www.nrel.gov/docs/fy15osti/62455.pdf published by NREL and subsequent State of Technology (FY17Q4 milestone report by Abhijit Dutta).						

Program	Bioenergy Technologies						
Performance Goal (Measure)	**Thermochemical** - Reduce modeled thermochemical conversion cost of a combined gasoline and diesel production ($/gge)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	$ 4.1 /gge	$ 3.7 /gge	$ 3 /gge	$ 2.47 /gge	N/A	N/A
Result	N/A	**Met** - 4.1	**Exceeded** - 3.69	**Met** - 3	**Met** - 2.47	N/A	N/A
Endpoint Target	$2.47/gge by 2017 ($2011) Measure is being discontinued in FY 2018 as overarching verification goal was met by the end of FY 2017.						
Commentary on 2017 Results (Action Plan if Not Met)	Preliminary figures. Final figures will be released with final report.						
Comment	The 2017 modeled cost target of $2.47/gge (2011 $) was projected through the use of methodology standard to BETO analysis. The details for arriving at this target, definition of nth plant, limitations and validation of figures are documented in the following report: http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-23053.pdf						
Documentation, Limitations, Methodology, Validation, and Verification	The LanzaTech and PNNL final report is expected to be released in Q2 of FY 2018.						

Hydrogen and Fuel Cell Technologies

Program	Hydrogen and Fuel Cell Technologies						
Performance Goal (Measure)	**Fuel Cell Power** - Improve the catalyst specific power of fuel cells (kW/gram of platinum group metal).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	5.9 kW/g	6.3 kW/g	6.5 kW/g	6.9 kW/g	7.1 kW/g	N/A	N/A
Result	**Exceeded** - 6	**Met** - 6.3	**Exceeded** - 6.6	**Met** - 6.9	**Exceeded** - 8	N/A	N/A
Endpoint Target	Measure discontinued in FY 2018 due to the strategic decision to shift towards earlier stage research on non-PGM catalysts. Industry will continue to improve the kW/gram of PGM catalysts without additional government investment.						
Commentary on 2017 Results (Action Plan if Not Met)	In FY2017, two catalysts were developed which met the 2017 GPRA milestone of improving the catalyst specific power of fuel cells to 7.1 kW/gPGM and surpassed the FCTO 2020 technical target for specific power output of 8.0 kW/gPGM at the Q/ΔT stipulated of 1.45 kW/°C. The first of these catalysts was developed by GM, as part of a project that focuses on the need to develop catalysts with high-performance and durability at both low and high current densities. The project aims to understand and overcome oxygen and proton transport limitations at high current density (HCD) with low Pt loadings (<0.100 mgPt/cm2). The highest specific activity to date was achieved using PtCo alloy particles supported on high surface area carbon (HSC). A PtCo/HSC catalyst with a Pt loading of 0.063 mgPt/cm2 showed the highest PGM utilization of any catalyst to date: 10.6 kW/gPGM at 150 kPa and 94 °C (14.1 kW/gPGM at 250 kPa and 94 °C), meeting the Q/ΔT requirement imposed by DOE targets. The two HSC catalysts developed in 2017 (PtCo/HSC-e and –f) show similar high activity at low current density to the 2016 PtCo/HSC-a catalyst, but with decreased transport losses at HCD. This improvement in performance is attributed to improved understanding of Pt and Co dissolution and to the selection of the carbon support based on improved understanding of support degradation and resistance to mass transport in nanopores.						
Documentation, Limitations, Methodology, Validation, and Verification	Observed laboratory results are documented in the following presentation. https://www.hydrogen.energy.gov/pdfs/review17/fc143_steinbach_2017_o.pdf. More detailed documentation is available in the internal FY17 EOY Catalyst Report.						

Program	Hydrogen and Fuel Cell Technologies						
Performance Goal (Measure)	**Fuel Cell Power New** - Improve the catalyst activity of Platinum Group Metal (PGM) free catalysts.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	25 mA/cm2	29 mA/cm2
Result	N/A	N/A	N/A	16	21	TBD	TBD
Endpoint Target	44 mA/cm2 by 2025.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Baseline: https://www.hydrogen.energy.gov/pdfs/review16/fc107_zelenay_2016_o.pdf. The following equation provides the comparison of the catalyst activity target to the previous specific power target $$\frac{mA}{cm^2} * \frac{cm^2}{g_{PGM}} * \frac{V}{10^6} = \frac{kW}{g_{PGM}}$$ This new target relates directly the how much catalyst is required to achieve the desired performance, however since it is now PGM-free the previous target of kW per gram PGM no longer applies. Eliminating the PGM catalyst from the stack provides a pathway for the program to meet the fuel cell ultimate cost target of $30/kW to enable a 27 ¢/mile LCD. Historical trend data is shown in the results field above to provide context, even where no formal GPRA Target was published for that year.						
Documentation, Limitations, Methodology, Validation, and Verification	2017 baseline determinations: https://www.hydrogen.energy.gov/pdfs/review16/fc107_zelenay_2016_o.pdf. Catalyst activity will be measured at 0.90 ViR-free in a lab-tested H2-O2 membrane electrode assembly (fuel cell) at an oxygen partial pressure (pO2) of 1.0 bar and a cell temperature of 80 °C.						

Program	Hydrogen and Fuel Cell Technologies						
Performance Goal (Measure)	**Hydrogen Delivery and Dispensing cost** - Reduce the cost of hydrogen delivery and dispensing.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	$ 12 /kg
Result	N/A	N/A	N/A	N/A	13	TBD	TBD
Endpoint Target	$5/kg by 2025						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	$5/kg target is aligned with the near-term cost target of $7/kg for hydrogen produced, delivered and dispensed untaxed and assumes $2/kg hydrogen production from natural gas. This is consistent with record: https://www.hydrogen.energy.gov/pdfs/15012_hydrogen_early_market_cost_target_2015_update.pdf The ultimate (beyond 2030) target for hydrogen to be cost competitive with gasoline on a $/gge basis is $4/kg apportioned to $2/kg for production and $2/kg delivery and would enable a 27 ¢/mile LCD. Historical trend data is shown in the results field above to provide context, even where no formal GPRA Target was published for that year.						
Documentation, Limitations, Methodology, Validation, and Verification	Results were modeled in HDSAM - https://www.hydrogen.energy.gov/h2a_analysis.html Costs are as modeled in HDSAM – the Hydrogen Delivery Scenario Analysis Model (HDSAM) and compared to the 2017 baseline of $13/kg as reported from HDSAM when a 180 kg/day gaseous station is modeled using current market utilization rates and available technologies. This baseline is consistent with today's retail stations. https://www.hydrogen.energy.gov/h2a_analysis.html						

Program	Hydrogen and Fuel Cell Technologies						
Performance Goal (Measure)	**Materials** - Identify advanced water splitting materials and associated pathways through leveraging the HydroGEN EMN Consortia.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	5 Materials
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	11 materials by 2022; accelerated discovery of advanced water splitting materials to meet the hydrogen production cost target						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Materials identified must have the potential to meet at least two technology-specific targets in efficiency, durability and/or materials cost as defined in the Hydrogen chapter of the FCTO Multi-Year Research Development and Demonstration plan, to reach the ultimate cost goal of <$2/kg. The HydroGEN EMN Consortium is focused on materials discovery and development for four diverse pathways to generate hydrogen via advanced water splitting (AWS): low temperature electrolysis, high temperature electrolysis, photoelectrochemical, and solar thermochemical. The three common parameters chosen for this metric (efficiency, durability, and materials cost) are of the greatest importance to AWS pathways. (The MYRDD is available at: https://energy.gov/sites/prod/files/2015/06/f23/fcto_myrdd_production.pdf)						
Documentation, Limitations, Methodology, Validation, and Verification							

Solar Energy

Program	Solar Energy						
Performance Goal (Measure)	**Concentrated Solar Power (CSP)** - Reduce the levelized cost of Concentrated Solar Power energy.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	18 cents/kWh (range 17-19)	15 cents/kWh	13 cents	N/A	N/A	N/A	8 cents/kWh
Result	**Met** - 14.4	**Exceeded** - 14	**Exceeded** - 12.9	12.5	10	TBD	TBD
Endpoint Target	5 cents/kWh by 2030.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	2017 baseline: 10 cents/kWh. The CSP energy cost target is an unsubsidized cost of energy at utility scale including 14 hours of thermal storage, in the U.S. southwest.						
Documentation, Limitations, Methodology, Validation, and Verification	Historical trend data was determined according the NREL's Annual Technology Baseline https://atb.nrel.gov/.						

Program	Solar Energy						
Performance Goal (Measure)	**Grid** - Reduce the modeled system cost of solar + storage to enable nationwide cost effective and safe integration of variable solar energy into our electric grid.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	$1.65 /WDC
Result	N/A	N/A	N/A	N/A	1.96	TBD	TBD
Endpoint Target	$1.45/WDC						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The solar + energy storage cost target is an unsubsidized cost of energy at utility scale array with 4 hours of battery storage. Model assumptions based on NREL analysis: 2017 NREL PV Benchmark Report, the Annual Technology Baseline and PV plus storage analysis. Historical trend data is shown in the results field above to provide context, even where no formal GPRA Target was published for that year.						
Documentation, Limitations, Methodology, Validation, and Verification	Model assumptions and results based on NREL analysis: 2017 NREL PV Benchmark Report https://www.nrel.gov/docs/fy17osti/68925.pdf Annual Technology Baseline https://atb.nrel.gov/ PV plus storage analysis https://www.nrel.gov/docs/fy17osti/68737.pdf WDC is Watts Direct Current.						

Program	Solar Energy						
Performance Goal (Measure)	**Photovoltaic (PV)** - Reduce the modeled Levelized Cost of Energy (LCOE) Solar PV energy.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	15 cents/kWh (range 13 – 17)	13 cents/kWh	10 cents/kWh	9 cents/kWh	7 cents/kWh	6 cents/kWh	5.5 cents/kWh
Result	**Met** - 15	**Exceeded** - 11	**Met** - 10	**Exceeded** - 8.2	**Exceeded** - 6	TBD	TBD
Endpoint Target	3 cents /kWh by 2030 (without subsidies), cost competitive with traditional electricity sources.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The PV solar energy cost target is an unsubsidized cost of energy at utility scale.						
Documentation, Limitations, Methodology, Validation, and Verification	Results are based on the technical report, “U.S. Solar Photovoltaic System Cost Benchmark: Q1 2017,” published by NREL. Levelized costs are for average U.S. climate and without subsidies. https://www.nrel.gov/docs/fy17osti/68925.pdf.						

Wind Energy

Program	Wind Energy						
Performance Goal (Measure)	**Offshore** - Reduce the modeled Levelized Cost of Energy (LCOE) from off-shore wind energy.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	22 cents/kWh	21.5 cents/kWh	19.9 cents per kwh	18.1 cents/kwh	17.2 cents/kWh	16.2 cents/kWh	15.7 cents/kWh
Result	**Met** - 22	**Exceeded** - 20.3	**Not Met** - 20.8	**Met** - 18.1	**Met** - 17.2	TBD	TBD
Endpoint Target	14.9 cents/kWh by 2020 9.3 cents/kWh by 2030						
Commentary on 2017 Results (Action Plan if Not Met)	WETO reports an Offshore Wind LCOE for FY17 in 2015 dollars- 17.2 cents/kWh						
Comment	The offshore wind energy cost target is an unsubsidized cost of energy at utility scale. Discount rate is derived from empirical European installations; Capacity weighted average installed CapEx and OpEx values derived from European Installations in 2016; 8.4 m/s Wind speed @ 50m hub height; and 20 year plant life.						
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in the “2016 Cost of Wind Energy Review” expected publication date January 2018						

Program	Wind Energy						
Performance Goal (Measure)	**Onshore** - Reduce the modeled Levelized Cost of Energy (LCOE) from land-based wind energy.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	8.3 cents/kWh	7.7 cents/kWh	6.9 cents/kwh	5.6 cents/kWh	5.5 cents/kWh	5.4 cents/kWh	5 cents/kWh
Result	**Met** - 8.3	**Met** - 7.4	**Met** - 6.9	**Met** - 5.6	**Exceeded** - 5.2	TBD	TBD
Endpoint Target	5.2 cents/kWh by 2020. 3.1 cents/kWh by 2030.						
Commentary on 2017 Results (Action Plan if Not Met)	WETO reports a Land Based Wind LCOE for FY17 in 2015 dollars- 5.2 cents/kWh.						
Comment	The onshore wind energy cost target is an unsubsidized cost of energy at utility scale. Real market Weighted Average Cost of Capital (WACC) of 5.6%; national capacity weighted average installed CapEx and OpEx values; 7.25 m/s Wind speed @ 50m hub height; and 25 year plant life.						
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in the “2016 Cost of Wind Energy Review” expected publication date January 2018.						

Water Power

Program	Water Power						
Performance Goal (Measure)	**Dams** - Reduce the modeled Levelized Cost of Energy (LCOE) from hydropower from non-powered dams.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	Establish Baseline	9.8 cents/kWh	9.7 cents/kWh	9.6 cents/kWh	9.4 cents/kWh
Result	N/A	N/A	**Met** - 10	**Met** - 9.8	**Met** - 9.7	TBD	TBD
Endpoint Target	9.2 cents/kWh by 2020 7.5 cents/kWh by 2030						
Commentary on 2017 Results (Action Plan if Not Met)	The hydropower program modeled the 2017 cost of energy for Non-Powered Dams at 9.7 cents/kWh.						
Comment	The hydropower from non-powered dams energy cost target is an unsubsidized cost of energy at utility scale. All terms and methodologies listed in the Hydropower Vision Report https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source. Small, low head.						
Documentation, Limitations, Methodology, Validation, and Verification	Modeled costs were completed according to the methodologies outlined in the Hydrovision Report: https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source.						

Program	Water Power						
Performance Goal (Measure)	**Marine & Hydrokinetic (MHK)** - Reduce the modeled Levelized Cost of Energy (LCOE) from Marine & Hydrokinetic technologies. 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: Test marine and hydrokinetic devices and components to determine baseline cost, performance, and reliability. (Cumulative number of devices tested)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	10 devices	6 cents/kWh	0.375 kW/ton	3 m/$M	66 cents/kWh	64 cents/kWh	60 cents/kWh
Result	**Met** - 10	**Exceeded** - 53	**Exceeded** - 0.4	**Met** - 3	**Met** - 66	TBD	TBD
Endpoint Target	27 cents / kWh by 2030						
Commentary on 2017 Results (Action Plan if Not Met)	The 2017 goal was met based on the results from the Wave Energy Prize which featured in-tank, full scale testing of MHK devices. The results were analyzed and aggregated to reach the goal of approximately 66 cents/kWh						
Comment	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 Report and reflect cost reductions in Capital Expenditures. https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source.						
Documentation, Limitations, Methodology, Validation, and Verification	Modeled costs were completed according to the methodologies outlined in the Hydrovision Report: https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source.						

Program	Water Power						
Performance Goal (Measure)	**Streams** - Reduce the modeled Levelized Cost of Energy (LCOE) from new stream developments.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	Establish Baseline	11.7 cents/kWh	11.5 cents/kWh	11.4 cents/kWh	11.15 cents/kWh
Result	N/A	N/A	**Met** - 11.9	**Met** - 11.7	**Met** - 11.5	TBD	TBD
Endpoint Target	10.9 cents/kWh by 2020 8.9 cents/kWh by 2030						
Commentary on 2017 Results (Action Plan if Not Met)	The hydropower program modeled the 2017 cost of energy for New-Stream Reach Development at 11.5 cents/kWh.						
Comment	The new stream developments energy cost target is an unsubsidized cost of energy at utility scale. 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						
Documentation, Limitations, Methodology, Validation, and Verification	Modeled costs were completed according to the methodologies outlined in the Hydrovision Report: https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source.						

Geothermal Technology

Program	Geothermal Technology						
Performance Goal (Measure)	**Systems** - Reduce the modeled Levelized Cost of Energy (LCOE) from newly developed geothermal systems. 2013+: includes both hydrothermal and Enhanced Geothermal Systems (EGS).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	21.7 cents/kWh
Result	**Met** - 22.5	**Met** - 22.4	**Met** - 22.3	**Met** - 22.2	**Met** - 22	TBD	TBD
Endpoint Target	6 cents/kWh by 2030						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The geothermal energy cost target is an unsubsidized cost of energy at utility scale. The Geothermal Electricity Technology Evaluation Model (GETEM) estimates the representative costs of generating electrical power from geothermal energy. The estimated costs are dependent upon a number of factors specific to the scenario being evaluated, with most of these factors defined by inputs provided. Based on the scenario characterization, cost estimates are developed for all aspects of a project needed to provide the specified or calculated power sales. These costs and annual power sales are the basis for determining a levelized cost of electricity (LCOE). The GETEM user manual is published on the Idaho National Lab Website here: https://workingincaes.inl.gov/SiteAssets/CAES%20Files/FORGE/inl_ext-16-38751%20GETEM%20User%20Manual%20Final.pdf						
Documentation, Limitations, Methodology, Validation, and Verification	GTO met the cost-improvement goal of 22.0 cents/kWh by developing analysis tools in the Play Fairway Analysis (PFA) projects that identify high grade areas for prospective geothermal development. This resulted in improved targeting for exploration drilling. GTO's analysis of PFA quarterly project reports indicates that these advances allow GTO to reach their FY17 goal.						

Advanced Manufacturing

Program	Advanced Manufacturing						
Performance Goal (Measure)	**Advanced Materials** - Improve manufacturing energy intensity as compared to a 2015 average technology baseline.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	7.5 %	10 %
Result	N/A	N/A	N/A	2.45 %	4.9 %	TBD	TBD
Endpoint Target	17.5% improvement by 2022 relative to a 2015 average technology specific baseline.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	This data is derived from 190 Better Plants partner companies with over 2,900 facilities. These represent 11.7% of the total U.S. Manufacturing footprint in diverse industries. Energy intensity is calculated either through Cumulative Energy Savings (TBtu) or Cumulative Cost Savings; baseline is aggregate of partner baselines. The basis for FY 2018 and beyond [no Better Plants] is cumulative from 2015 average technology baseline- derived from bandwidth type studies as compared to new technologies developed within the AMO portfolio: https://www.energy.gov/eere/amo/energy-analysis-data-and-reports. Additional detail on specific technologies and energy productivity improvements is detailed in the Multi-Year Program Plan (MYPP) https://energy.gov/eere/amo/downloads/advanced-manufacturing-office-amo-multi-year-program-plan-fiscal-years-2017 and the PNNL analysis on AMO funded commercialized technologies https://energy.gov/eere/amo/impacts-industrial-energy-use.						
Documentation, Limitations, Methodology, Validation, and Verification	Results can be found in the Better Plants average energy intensity improvement: https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/2017_Better_Plants_Progress_Update.pdf						

Program	Advanced Manufacturing						
Performance Goal (Measure)	**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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	2 Consortia	2 Consortia	1 Consortia	1 Consortia	2 Consortia	N/A	N/A
Result	**Met** - 2	**Met** - 2	**Met** - 1	**Met** - 1	**Met** - 2	N/A	N/A
Endpoint Target	Measure discontinued in FY18 due to a shift in focus towards early-stage R&D.						
Commentary on 2017 Results (Action Plan if Not Met)	Oak Ridge Manufacturing Demonstration Facility (MDF)(FY2013); Critical Materials Hub(FY2013); PowerAmerica—The Next Generation Power Electronics Manufacturing Innovation Institute (wide bandgap power electronics manufacturing), (FY2014); HPC4Mfg (FY2014); IACMI—Institute for Advanced Composites Manufacturing Innovation (fiber-reinforced polymer composites) (FY2015); CESMII—Clean Energy Smart Manufacturing Innovation Institute (smart manufacturing) (FY2016); Rapid Advancement in Process Intensification Deployment (RAPID) Institute (FY2017); Clean Energy Manufacturing Innovation Institute for Reducing EMbodied-energy And Decreasing Emissions (REMADE) in Materials Manufacturing will dramatically reduce life-cycle energy consumption through the development of technologies for reuse, recycling, and remanufacturing of material(FY2017).						
Documentation, Limitations, Methodology, Validation, and Verification	Selected consortia are documented here https://energy.gov/eere/amo/research-development-consortia as well as the upcoming National Network for Manufacturing Innovation Program 2016 Annual Report.						

Building Technologies

Program	Building Technologies						
Performance Goal (Measure)	**HVAC** - Identify technology solutions capable of achieving dehumidification levels with less energy than conventional system						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	1 Technology Solution
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	3 technology solutions by 2021						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Laboratory prototype tested on the ability to dehumidify air at 33 degrees centigrade with 90% relative humidity to 35% relative humidity isothermally and adiabatically. Note: For gas-fired dehumidification technologies the above numbers need to be divided by the factor of the three to account for the difference between kWh electric vs. kWh thermal. Standards are set according to electric code of federal regulations (as of Dec 28 2017: https://www.ecfr.gov/cgi-bin/text-idx?rgn=div8&node=10:3.0.1.4.18.3.9.2)						
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Building Technologies						
Performance Goal (Measure)	**Lighting** - Decrease the manufacturing cost of a warm white LED package. (Lumens/$) 2013: Increase lighting efficacy of “warm white light” solid-state lighting in a lab device.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	148 lm/W	128 lm/$	144 lm/$	188 lm/$	210 lm/$	N/A	N/A
Result	**Met** - 148	**Exceeded** - 150	**Exceeded** - 176	**Met** - 188	**Met** - 210	N/A	N/A
Endpoint Target	271 lm/$ by 2020						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Metric discontinued in FY2018 due to shift towards early-stage R&D.						
Documentation, Limitations, Methodology, Validation, and Verification	Published the findings on the 2017 achievement: https://energy.gov/eere/ssl/lumileds-exceeds-210-lm-milestone-high-power-leds						

Program	Building Technologies						
Performance Goal (Measure)	**Lighting Energy Efficiency** - Increase power conversion efficiency of amber light						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	13 %	15 %
Result	N/A	N/A	N/A	N/A	10 %	TBD	TBD
Endpoint Target	30% power conversion efficiency of amber light by 2025						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	2017 Baseline: 10% power conversion efficiency of amber light. To achieve the endpoint target of 350 lm/W of mixed monochromatic white light we need to increase the power conversion efficiency of all four wavelengths (green, amber, red and blue). We are focusing on amber in FY 2019 because it has the most significant technical barriers with the greatest early stage R&D opportunity. Increasing the power conversion efficiency of amber light directly contributes towards lm/W, though it is impossible to calculate by exactly how much. FY 2019 target is to achieve, in a laboratory prototype specimen, an increased percent conversion of electric power into amber light (580-595nm) with a 1 mm2 die at current density of 35A/cm2 and junction temperature of 25 C.						
Documentation, Limitations, Methodology, Validation, and Verification	2017 modeled data is based on the Solid-State Lighting R&D Plan report: https://energy.gov/sites/prod/files/2017/09/f37/ssl_suggested-research-topics_sep2017.pdf						

Program	Building Technologies						
Performance Goal (Measure)	**Standards** - Issue energy efficiency standards in line with statutory requirements.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	3 Standards
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Standards will be issued in line with the statutorily defined standards review schedule.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The energy conservation standards performance goal is based on the statutory requirements and associated deadlines.						
Documentation, Limitations, Methodology, Validation, and Verification							

Federal Energy Management Program

Program	Federal Energy Management Program						
Performance Goal (Measure)	**Investments** - Total Federal Investment in Facilities Energy Conservation Measures Government-Wide ($Million)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	$ 750 Million	$ 750 Million	$ 750 Million	$ 1,770 Million	$ 1,770 Million
Result	N/A	N/A	**Exceeded** - 1,980	**Exceeded** - 1,735	**Exceeded** - 1,337	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 2017 Results (Action Plan if Not Met)	Preliminary data confirms DOE/FEMP IDIQ ESPC awards during FY 2017 totaling $710 million in project investment. FY 2017 investment awarded under DOE/FEMP ENABLE performance contracting program was $14.6 million. (See: https://www.energy.gov/eere/femp/downloads/doe-idiq-energy-savings-performance-contract-awarded-projects for IDIQ and ENABLE data.) Ten major agencies projected $500 million in direct obligations for efficiency investment for FY 2017 in their FY 2016 Annual Energy Data Reports submitted in January 2016. Preliminary UESC award data for FY 2017 totals $112.5 million based on EISA Compliance Tracking System, OMB Max, and utility-reported data.						
Comment	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. Therefore 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). One job-year = $125,000 of infrastructure investment. Cost of energy saved for FY 2015: $25/million Btu escalated 2% each year. The EISA 432 Compliance Tracking System (CTS) developed and managed by FEMP tracks agency performance of energy and water evaluations, project implementation and follow-up measures, and annual building benchmarking requirements. Agencies are required to implement reported energy and water efficiency measures (ECMs), including estimated cost and savings. FEMP also tracks and monitors the follow-up status on implemented measures, including measured savings and persistence of savings.						
Documentation, Limitations, Methodology, Validation, and Verification	Agency investment results are published on FEMP's data site. See here for results: http://ctsedwweb.ee.doe.gov/Annual/Report/InvestmentInEnergyEfficiencyAndRenewableEnergy.aspx						

Program	Federal Energy Management Program						
Performance Goal (Measure)	**Workforce Development** - Increase total Hours of workforce development training provided by FEMP						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	40,000 hours	42,500 hours
Result	- 17,161	- 19,777	- 29,249	- 35,249	- 37,612	TBD	TBD
Endpoint Target	50,000 training hours developed and offered by FEMP by 2025.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	FEMP manages all course and training registration/attendance data through the learning management system developed by the National Institute of Building Science's (NIBS) Whole Building Design Guide. All training attendance data is reported monthly to FEMP. The metric, hours of training provided, is calculated using the attendance from each training offering, taking into consideration the type and length of that training format. This metric provides FEMP with a clear and weighted measurement of how FEMP training material is being utilized and identifies which courses are most critical. This also is a more useful metric then just simple registration data, since many attendees take multiple courses throughout the year, thus it is critical to capture their attendance as well.						
Documentation, Limitations, Methodology, Validation, and Verification	Training data is captured through the FEMP Central and Energy Exchange database systems, which collects registration and attendance data from a number of sites. These databases capture personal information and as a result are not made publicly available. Total hours of FEMP workforce development and other training data reports generated from these databases are available upon request.						

Weatherization and Intergovernmental Programs

Program	Weatherization and Intergovernmental Programs						
Performance Goal (Measure)	**Retrofits** - Weatherize homes of low income families						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	21,286 homes weatherized	24,600 homes weatherized	33,100 homes weatherized	33,600 homes weatherized	33,000 homes weatherized	36,000 homes weatherized	N/A
Result	**Met** - 21,286	**Exceeded** - 38,000	**Exceeded** - 34,220	**Not Met** - 31,370	**Exceeded** - 37,512	TBD	N/A
Endpoint Target	Measure is discontinued as of FY 2019.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	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.						
Documentation, Limitations, Methodology, Validation, and Verification	See Comment.						

Electricity Delivery

Transmission Reliability and Resilience

Program	Transmission Reliability and Resilience						
Performance Goal (Measure)	**Advanced Modeling Grid Research** - Development of capabilities in understanding, modeling, and predicting grid behavior in real-time.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	N/A
Result	**Met** - 1	**Met** - 1	**Met**	**Met**	**Met**	N/A	N/A
Endpoint Target	Realization of advanced modeling capabilities, including dynamic operation, real-time analysis, and predictive response.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	This performance goal is not continued into FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	The real-time data and model that are used for testing methods and validating power system models came from ERCOT (Electric Reliability Council of Texas) real-time system. User cases that represented different scenarios were used to compare the simulation performance between without and with the DCAT (Dynamic Contingency Analysis Tool) to show the effectiveness and performance of the algorithm. HPC (High Performance Computing) is not commonly used among the tools in an electric power system for simulation and monitoring of the system. DCAT takes advantage of HPC to assess the impact and likelihood of extreme contingencies and potential cascading events across the systems and interconnections. Any effective tool needs to be able to run against real-time data. In FY 2017, DCAT was run using ERCOT's real-time data. The main data limitation rests with the protection relay data across the entire power grid to be studied. Currently, the DCAT uses default settings for all the protection relay devices including generator protection, load shedding, transmission protection, etc., which are required by North American Electric Reliability Corporation (NERC) standards. Another data limitation is with generator participation factors used in the re-dispatch process when the system is subject to severe power imbalance. Using the default settings of the protection system for running DCAT simulations provides a preliminary security assessment of the system following severe disturbances, assuming users have met the NERC requirements. The real-world data used for testing the DCAT are ERCOT's real-time data. There is a quality code associated with all of the ERCOT data in its control system and there is a redundancy in the data as well. Data are regularly checked and bad data are identified and disabled or removed from data set. As a result all data used by DCAT has already been sanitized by ERCOT.						

Program	Transmission Reliability and Resilience						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	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	N/A
Result	N/A	N/A	**Met**	**Met**	**Met**	N/A	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.						
Commentary on 2017 Results (Action Plan if Not Met)	Analytical product deliverables: (1) ICE Calculator tool and (2) Special Assessment on Single Point of Disruption to Natural Gas Infrastructure						
Comment	This performance goal is not continued into FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	The FY 2017 End Point attainment is based on the following FY 2017 tool and analytical product deliverables; (1) ICE Calculator tool and (2) Special Assessment on Single Point of Disruption to Natural Gas Infrastructure. The deliverable product project teams included lab personnel, working in collaboration with the Transmission Permitting and Technical Assistance (TPTA) HQ Program Managers. There were no data limitations and the deliverables testing/validation was performed at the lab level and reviewed by the TPTA HQ Program Managers.						

Program	Transmission Reliability and Resilience						
Performance Goal (Measure)	**Transmission Reliability and Resilience** - 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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.	Develop and test the algorithmic methods for power system recovery/restoration to improve the resiliency of the electric power system.
Result	**Met** - 1	**Met** - 1	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	Realization of a nationwide network of utility-owned synchrophasors with 100% sensor coverage of the transmission system by the end of FY 2020, allowing for complete, real-time monitoring of transmission system health.						
Commentary on 2017 Results (Action Plan if Not Met)	A suite of analysis tools that detect four types of grid dynamics was developed by Washington State University and demonstrated at Southern Company that captures dynamics signatures that are the bases for testing proposed grid design against these dynamics.						
Documentation, Limitations, Methodology, Validation, and Verification	Data came from Southern Company's synchrophasor network, and is collected, transmitted, verified, archived and analyzed by Southern Company (i.e., the host utility). The raw data (voltage, current, and phase angles) are used to calculate real and reactive power and frequency. This provides a quality check on the actual electrical quantities versus the values calculated from the grid model. Known data limitations have been encountered and addressed, including missing data, drop-outs, etc. All known limitations have been resolved. For example fiber cable was upgraded to a higher bandwidth and an entirely new transmission protocol was developed to handle the streaming data to be archived at the control center. All the Phasor Measurement Units (PMUs) are high-speed digital recorders that are kept in precise synchronism by a GPS timing function so that they record data at the same instant in time. The data from each PMU is sent to a Phasor Data Concentrator, which time aligns all the recordings and makes other checks on the data, including repairs, such as interpolating to restore missing data.						

Resilient Distribution Systems

Program	Resilient Distribution Systems						
Performance Goal (Measure)	**Resilient Distribution Systems** - Develop and validate the technical feasibility of integrated distribution control architectures to effectively provide resilient grid services from all types of distribution assets.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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.	Complete real-time simulation testing of a networked microgrid system design, and assess the value associated with resilient grid services.
Result	**Met** - 1	**Met** - 1	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	Achievement of a resilient distribution system, with integration of networked microgrids and transactive control signals operating in coordination with the ADMS, that allows for integration of all types of energy resources by the end of FY 2030						
Commentary on 2017 Results (Action Plan if Not Met)	Development of alpha version of design support tool completed and demonstrated for off-grid applications on National Rural Electric Cooperative Association (NRECA) power system testing and validation data sets. The design support tool was also tested and demonstrated on system data for the remote off-grid microgrid in Nome, Alaska.						
Documentation, Limitations, Methodology, Validation, and Verification	The data sources for end of year (EOY) results are from quarterly reports or in-process review presentations from national laboratories. The EOY results reflect completion of a development ready for review or use by stakeholder organizations, or demonstration of a tool, device, or system via simulation or at a user site. For example, in FY 2017, the ROMDST (Remote Off-grid Design Support Tool) was developed and used by the Alaska Center for Energy and Power (ACEP), GE, and Burns Engineering for designing test microgrids in Alaska. Limitations on test scenarios or cases are related to available budget. The appropriate action taken is to select test cases that are representative of utility applications. Information/data errors are typically uncovered during testing and demonstration phases, when compared to baselines. Any systematic errors or biases are noted in the test results, when published.						

Energy Storage

Program	Energy Storage						
Performance Goal (Measure)	**Energy Storage** - Lower the cost of grid-scale (>1 MW) energy storage technologies.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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)	$275/kWh for a 4-hour system (aqueous soluble organic electrolyte)	$225/kWh for a 4-hour system (aqueous soluble organic electrolyte); for a projected 1 MW/4 MWh system operating at 150 mA/cm2
Result	**Met** - 475	**Met** - 400	**Met** - 325	**Met** - 300	**Met**	TBD	TBD
Endpoint Target	By the end of FY 2025, the cost of a prototype redox flow battery system will be $100/kWh						
Commentary on 2017 Results (Action Plan if Not Met)	Projected systems cost for a 1MW/4MWh flow battery based on the new phenazine-ferricyanide aqueous soluble organic (ASO) electrolyte are less than $350kWh when operating at 50mA/cm2 and a 2.8M effective concentration. New ASO system demonstrated 90% capacity retention after 500 cycles.						
Documentation, Limitations, Methodology, Validation, and Verification	PNNL developed a comprehensive cost model for developed flow batteries systems (V. Viswanathan, et al., Journal of Power Sources (2012)) which can estimate the component costs for 1 MW/4MWh redox flow battery system (stack, electrolytes, PCS, etc.) based on the key performance parameters such as electrolyte concentration and flow rate, usable state of charge range, current density, and round trip efficiency. The data used to calculate the EOY PMM results was obtained from extensive laboratory testing of phenazine-ferricyanide based electrolytes to determine the key performance parameters required for the cost model which itself was validated for vanadium flow batteries over the course of five years. Technical results such as 50mA/cm2, 2.8M, 90% capacity retention, are all taken directly from the laboratory experiments. These technical performance parameters are input into the redox flow cost model referenced above to determine the projected systems costs for 1MW/4MWh flow battery. For detailed laboratory results and economic model calculation see the Q4 Final Report: High Current Density Redox Flow Batteries for Stationary Electrical Energy Storage. PNNL REPORT, 26312-4, Sep. 2017. There are no data limitations in determining the technical performance parameters used in the EOY Performance Measure Manager (PMM) milestone. Economic data used to calculate the cost of the different redox components is obtained through discussions and quotes from vendors. Periodic updating of these cost numbers is done to ensure the model accurately reflects the current state of the technology. Technical performance data is peer-reviewed biweekly in technical group meetings to ensure the integrity of the data. The technical results are reported in the FY 2017 Final Report and submitted to scientific journals which are independently peer-reviewed before publication.						

Transformer Resilience and Advanced Components

Program	Transformer Resilience and Advanced Components						
Performance Goal (Measure)	**Transformer Resilience and Advanced Components** - Develop tools and technologies that enable the next-generation of grid hardware to be more adaptive, more flexible, self-healing, resilient to all-hazards, reliable, and cost-effective compared to technologies available today, and maximizes the value and lifetimes of current grid components.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	Complete design of a large power transformer with variable impedance of ± 5% to increase adaptability	Complete design tool for converters with 5% increase in soft magnetic model accuracy compared to benchmark
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	By the end of FY 2030, next-generation transformers and converters will be developed that can be utilized in more than 80% of substations cost-effectively while increasing the transformer and converter flexibility and resiliency by 50%.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	35 states/tribes assisted	35 states/tribes assisted	40 states and tribes assisted	50 states/tribes assisted	45 states/tribes assisted	50 states/tribes assisted	40 states/tribes assisted
Result	**Met** - 35	**Met** - 35	**Met** - 40	**Met** - 50	**Met** - 45	TBD	TBD
Endpoint Target	Increased access to reliable, affordable, and sustainable energy sources.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Transmission Permitting and Technical Assistance (TPTA) manages all aspects of the technical assistance (TA) program from inception to closure using best practices in project management. TPTA maintains an internal tracking database that includes all TA requests, project plans, and progress reports. Data is collected from the national laboratories and other entities responsible for conducting the TA on a quarterly basis. TPTA conducts annual reviews on the TA work performed by the national labs and other entities to ensure the goals of their products are being met and future plans are aligned with meeting TPTA's mission. Included in the TPTA technical assistance tracking process are the fifty (50) United States, recognized U.S. territories, U.S. federally recognized Native American tribes, and Instrumentalities of the States. Lawrence Berkeley National Laboratory (LBNL) is the lead laboratory in the technical assistance tracking and the TPTA Program Managers review the reporting and follow up with the labs with any questions in the reported data.						

Cybersecurity, Energy Security, and Emergency Response

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	1 energy delivery field device	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.	Complete prototype of an early stage technology for prevention, detection, mitigation, or resilience against cyber incidents in energy delivery systems.
Result	**Met** - 1	**Met** - 1	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	Continuously advance the vision of reliable and resilient energy delivery systems throughout our Nation that are designed, installed, operated, and maintained to survive a cyber incident while sustaining critical functions.						
Commentary on 2017 Results (Action Plan if Not Met)	The Schweitzer Engineering Laboratories (SEL) "Tempus" project, award #DE-OE000835, has met this target. In June of 2017, SEL finalized their design of the Tempus products that detects spoofing attacks and defends GPS-based systems. This will result in a cyber-secure time synchronization platform for critical substation applications, with automatic fail-over to a trusted time source in the event of GPS spoofing.						
Comment	This performance measure was associated with the Electricity Delivery and Energy Reliability appropriation prior to FY 2019.						
Documentation, Limitations, Methodology, Validation, and Verification	The data contained in the SEL report titled "Topical report on system functionality and specifications" were used to fulfill the EOY target. This report comprises the top-level systems requirements specification that combines the use cases and technical requirements. This document will lead the development of all software and hardware designs. The Tempus team has completed this phase of the project, is commencing the development phase, and will be working on hardware components and functionality aspects of the Tempus product. All Cybersecurity for Energy Delivery Systems (CEDS) project deliverables are reviewed for accuracy and to ensure that they adhere to the financial assistance agreement requirements. Project milestones, deliverables, decision points, and overall status are tracked. The CEDS Program adheres to sound project management practices. Also, most CEDS projects have industry partners to ensure research results provide viable solutions to real-world needs. The Tempus project has an industry partner, BPA, to ensure that the developed product will be commercially viable.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	500 active accounts with more than 5% from state and local partners	Achieve 1,000 active accounts with more than 100 from state, local, and private sector partners.	N/A
Result	N/A	N/A	N/A	N/A	**Met**	TBD	N/A
Endpoint Target	By the end of FY 2018, EAGLE-I will be the predominant source for energy situational awareness for mission partners during an emergency as measured by having more than 1,000 active accounts from all types of stakeholders						
Commentary on 2017 Results (Action Plan if Not Met)	1290 active accounts of which 177 (14%) were state Energy Emergency Assurance Coordinators (EEAC) or Emergency Operation Center (EOC) staff. EAGLE-I authentication and authorization processes track active and “last login” status of user accounts. An active account and login is an indication of EAGLE-I use—the value of which is validated through user training and communication. Increasing numbers of accounts and usage are indications of increasing EAGLE-I value and capability. The addition of state and local partners to the EAGLE-I user count is an indicator of ISER and EAGLE-I extending situational awareness capabilities into the ISER emergency response mission partners at the state level, thus providing unity of message communications during Federal emergency response operations.						
Comment	This performance measure is not continued into FY 2019. This performance measure was associated with the Electricity Delivery and Energy Reliability appropriation prior to FY 2019.						
Documentation, Limitations, Methodology, Validation, and Verification	The data used to calculate the EOY Result was reported from the EAGLE-I user database. The result is calculated using the following; Total: the total number of active EAGLE-I users, and State User Percentage: Total number of state affiliated users divided by the total number of active EAGLE-I users. There were no data limitations and the same data is used to manage EAGLE-I user accounts and user access to EAGLE-I. The EAGLE-I application suspends a user account if not used for 90 days. State users are sponsored and confirmed by the ISER State, Local, Tribal, Territorial (SLTT) Program Manager.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	N/A
Result	**Met** - 30	**Met** - 45	**Met** - 60	**Met** - 70	**Met**	N/A	N/A
Endpoint Target	By the end of FY 2023, EAGLE-I will be the predominant source for energy sector situational awareness for mission partners for emergency response and preparedness by maintaining an active user base that includes all federal, state, local, and private sector mission partners; and direct sharing or integration with other federal situational awareness platforms.						
Commentary on 2017 Results (Action Plan if Not Met)	99.5% availability						
Comment	This measure is not continued into FY 2018. This performance measure was associated with the Electricity Delivery and Energy Reliability appropriation prior to FY 2019.						
Documentation, Limitations, Methodology, Validation, and Verification	The data came from EAGLE-I application, system, support infrastructure, and network logs, which are used to determine the extent of availability issues. Availability is calculated as the number of unplanned unavailability hours divided by the number of hours in a year. The most significant data limitations are associated with unavailability due to a partial EAGLE-I system outages. The partial system outage weight contribution to availability is determined by the Energy Sector Situational Awareness (ESSA) program manager. In FY 2017, the contribution of partial outages to the annual outage calculation was less than 0.5 percent. The EAGLE-I operations team ensures performance data reliability through use of multiple data sources and multiple reviews before the result is provided to the ESSA Program Manager. The ESSA Program Manager and ISER analysts monitor EAGLE-I availability as an independent check of the EAGLE-I operations team's availability calculation.						

Program	Infrastructure Security and Energy Reliability (ISER)						
Performance Goal (Measure)	**ISER Situational Awareness Capability** - Improve information sharing among energy sector emergency response stakeholders and mission partners by expanding EAGLE-I situational awareness capabilities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	Implement an information sharing capability (e.g., web services) with state emergency operations centers.
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	By the end of FY 2023, all federal, state, local, and private sector mission partners will have access to EAGLE-I capabilities for energy sector situational awareness, emergency response, and emergency preparedness. EAGLE-I will provide sharing or integration capabilities with other federal situational awareness mission partners.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Fossil Energy Research and Development

FERD - Natural Gas Technologies

Program	FERD - Natural Gas Technologies						
Performance Goal (Measure)	**Natural gas infrastructure research** - Increase the modeled efficiency of natural gas infrastructure as demonstrated by a modeled decrease in fugitive methane emissions by 50%.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	0 % modeled reduction of fugitive methane emissions	5 % modeled reduction of fugitive methane emissions
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	By the end of FY 2022, develop technologies that will reduce modeled fugitive methane emissions from natural gas transmission and distribution infrastructure by 50% to a level of 13.4 MMT CO2 from the current level of 26.7 MMT CO2, as identified in the EPA's Greenhouse Gas Inventory.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

FERD - Unconventional FE Technologies

Program	FERD - Unconventional FE Technologies						
Performance Goal (Measure)	**Unconventional FE technologies** - Improve modeled unconventional resource recovery to 12%.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	10 % modeled recovery efficiency	11 % modeled recovery efficiency
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	By the end of FY 2022, develop technologies and production methods for unconventional resources to improve modeled recovery efficiency to 12% from the current recovery efficiency level of 10%.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

FERD - Coal

Program	FERD - Coal						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	N/A Measure ended in FY 2017
Result	**Met** - 2	**Met** - 1	**Exceeded** - 4	**Not Met** - 1	**Not Met** - 3	N/A	TBD
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 end of FY 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 2017 Results (Action Plan if Not Met)	The annual target to initiate operations at four CCS demonstrations was not met because of the decision to terminate construction and shakedown at the Kemper IGCC project. **Action Plan:** 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.						
Documentation, Limitations, Methodology, Validation, and Verification	The Petra Nova project that was part of the CCPI-2 started commercial operations in FY17 and Archer Daniels Midland (ADM) project that is part of ICCS also started operations in FY17. This brings a total of two ICCS projects to commercial operation (ADM in FY17 and Air Products in FY13) and one CCPI project (Petra Nova in FY17.)						

Program	FERD - Coal						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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	N/A
Result	**Met** - 53	**Met** - 53	**Met** - 50.9	**Met** - 49	**Met** - 46.6	N/A	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.						
Commentary on 2017 Results (Action Plan if Not Met)	Annual Performance Measure Met: An independent engineering, systems, and cost analysis confirmed 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 would provide a technology that can achieve a cost of capture or $46.60 per metric ton (tonne) of CO2 captured at a commercial nth-of-a-kind plant. R&D progress in post-combustion capture solvent development to reduce the energy demand, process heat integration, and reduction in the capital cost due to improved absorber/stripper process design provided the basis for this year's independent assessment.						
Documentation, Limitations, Methodology, Validation, and Verification	Aspen and economic modeling was completed by DOE and it's sub-contractor to determine whether the metric was met for 2017. This was based on the results of the R&D completed under the cooperative agreement with Linde to validate the BASF OASE-Blue solvent at the National Carbon Capture Center. The results and data of the pilot plant testing that was completed earlier this year were used by NETL to model the system in a 550MWe coal fired power plant using the quality cost and economic systems modeling guidelines and tools. The modeling was completed and validated by the MESA contractor and its sub-contractors. The NETL systems analysis staff completed a review of both the project results and the Aspen and economic modeling to ensure its accuracy. The data is located in the NETL project files and with the NETL systems and engineering modeling team.						

Program	FERD - Coal						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	N/A
Result	**Met** - 4.7	**Met** - 7.6	**Met** - 11.2	**Met** - 13.2	**Exceeded** - 14	N/A	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 2017 Results (Action Plan if Not Met)	The performance measure for 2017 has been met with 13,968,333 metric tons of CO2 injected at large-volume field projects conducted by the Midwest Geological Sequestration Consortium (MGSC), the Midwest Regional Carbon Sequestration Partnership (MRCSP), the Plains CO2 Reduction (PCOR) Partnership, the Southeast Regional Carbon Sequestration Partnership (SECARB), and the Southwest Regional Carbon Sequestration Partnership (SWP).						
Documentation, Limitations, Methodology, Validation, and Verification	Each RCSP reports the CO2 volume injected at their site to NETL on a monthly basis. The Injection volume for each RCSP is measured by the site operator using industry standard flow metering methods. NETL compiles the injected CO2 volume information from the RCSPs and reports the total CO2 volume injected to FEHQ on a monthly basis.						

Program	FERD - Coal						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	Identify material properties to meet transformational goals	Synthesize and develop process models for at least two technology types (e.g., metal organic frameworks and non-binding organic liquid solvents) that show potential to meet the 2030 target of a 30% reduction in COE ($30/tonne of CO2 captured).
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	By CY 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 CY 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 2017 Results (Action Plan if Not Met)							
Comment	Typical laboratory and bench-scale R&D projects are conducted in 2-3 year time periods, after which point, systems analyses are conducted to validate current progress against target, and status of the technology in relation to the DOE program goals. Progress against the target will be updated accordingly during that period.						
Documentation, Limitations, Methodology, Validation, and Verification							

Program	FERD - Coal						
Performance Goal (Measure)	**Power Plant Efficiency Improvements (Existing Plants)** - Increase the average modeled efficiency (heat rate) of existing coal based power plants.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	31 %	31 %
Result	N/A	N/A	N/A	N/A	31	TBD	TBD
Endpoint Target	By the end of FY 2022, improve the average modeled efficiency (heat rate) of a typical plant in the existing fleet by 5 percent from the 2017 baseline of 31 percent (i.e., to 32.5%)						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The original FY 2018 performance goal was to complete the Efficiency Improvement Roadmap to 2030. Typical laboratory and bench-scale R&D projects are conducted in 2-3 year time periods, after which point, systems analyses are conducted to validate current progress against target, and status of the technology in relation to the DOE program goals. Progress against the target will be updated accordingly during that period.						
Documentation, Limitations, Methodology, Validation, and Verification	Average Heat Rate Sources (as of 12/13/2017) U.S. EPA CEMS hourly data – most recent 3 years of data U.S. EIA 906/923 Monthly Plant Generation and Consumption data – most recent 3 years of data Modeled Monthly Plant Production Costs – most recent 3 years of data U.S. FERC Form 1 – most recent 3 years of data						

Program	FERD - Coal						
Performance Goal (Measure)	**Power Plant Efficiency Improvements (New Plants)** - Increase the average modeled efficiency (heat rate) of new coal based power plants.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	38 %	38 %
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	By the end of FY 2023, improve the average modeled efficiency (heat rate) of an advanced or new coal plant by 5 percent from the 2017 baseline of 38 percent (i.e., to 40%).						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The original FY 2018 target was to complete the Efficiency Improvement Roadmap to 2030. Typical laboratory and bench-scale R&D projects are conducted in 2-3 year time periods, after which point, systems analyses are conducted to validate current progress against target, and status of the technology in relation to the DOE program goals. Progress against the target will be updated accordingly during that period.						
Documentation, Limitations, Methodology, Validation, and Verification							

Petroleum Reserves

Program	Petroleum Reserves						
Performance Goal (Measure)	**Drawdown Readiness** - Ensure the operational readiness of the SPR through the achievement of equal to or greater than 95% of the annual average of monthly maintenance performance and reliability goals.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 and accessibility goals achieved	95 % of monthly maintenance achieved	95 % of monthly maintenance achieved
Result	**Met** - 96.45	**Met** - 96.8	**Met** - 97.6	**Met** - 98.1	**Met** - 98.36	TBD	TBD
Endpoint Target	Achieve 95% of monthly maintenance and accessibility goals in all years.						
Commentary on 2017 Results (Action Plan if Not Met)	Met target						
Documentation, Limitations, Methodology, Validation, and Verification	Data are downloaded and collected monthly through a SAP Plant Maintenance System. Analysis reports are generated from these data, and reviewed by Federal staff on monthly basis. 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)	**Multi-Year Oil Sales** - Ensure cost efficiency of drawdown operations while meeting mandates of all legislatively-directed oil sales.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	Annual drawdown costs < 1.5% of revenue earned
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Achieve annual drawdown costs of <1.5% of revenue earned.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Petroleum Reserves						
Performance Goal (Measure)	**SPR Modernization Project** - Ensure project schedule and cost efficiency through achievement of satisfactory performance index scores that assess the magnitude of variation from the established schedule and cost baselines.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	≥ 0.85 on both the Cost and Schedule Performance Index
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Reach overall ≥ .90 Score on both the Cost and Schedule Performance Index at project closeout in 2022.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Petroleum Reserves						
Performance Goal (Measure)	**SPR Operating Cost** - Ensure the cost efficiency of SPR operations through the achievement of an operating cost per barrel of crude oil storage capacity of no more than $0.30 per barrel						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≤ 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	≤ 0.3 $ operating cost per barrel	≤ 0.3 $ operating cost per barrel
Result	**Met** - 0.239	**Met** - 0.239	**Met** - 0.233	**Met** - 0.25	**Met** - 0.248	TBD	TBD
Endpoint Target	Achieve ≤ $ 0.30 operating cost per barrel.						
Commentary on 2017 Results (Action Plan if Not Met)	Met target						
Documentation, Limitations, Methodology, Validation, and Verification	Cost data are 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** - Maintain the capability to drawdown the SPR at the design drawdown rate of 4.415 million barrels per day.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	4.13 MMB/Day drawdown readiness rate	4.13 MMB/Day drawdown readiness rate
Result	**Met** - 4.25	**Met** - 4.25	**Met** - 4.25	**Not Met** - 4.1	**Not Met** - 4.17	TBD	TBD
Endpoint Target	Maintain a 90 day drawdown rate of 4.415 million barrels per day by 2022 (end of Life Extension 2).						
Commentary on 2017 Results (Action Plan if Not Met)	Missed target due to 1) one cavern being unavailable for drawdown for six months of the year, and another cavern being unavailable for the last two months of the fiscal year; and, 2) a site being unavailable for drawdown for six days after a pipeline failure. **Action Plan:** Fell below the target due to reductions to crude oil inventory (non-emergency oil sales) and extended periods of cavern unavailability. Cavern unavailability is being addressed through the Casing Inspection and Cavern Remediation Program. Mandates for long term non-emergency oil sales and funding constraints to the remediation program continue to impact annual targets. There is no action plan to get the measure back to 4.2 MMB/Day and future targets reflect the continued downward trend.						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 100	**Not Met** - 88	**Met** - 91	**Met** - 94	**Met** - 100	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 2017 Results (Action Plan if Not Met)	Completion of milestones further developed several advanced reactor concepts. This helps ensure that the reactor concepts will be technologically ready when industry decides to build advanced reactors.						
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in signed quarterly performance memos from NE program DAS to NE COO. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned.						

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**Advanced Modeling and Simulation** - Complete 90% of annual integrated program milestones to support deployment of advanced modeling and simulation (M&S) tools that will help solve important Light Water Reactor (LWR) performance and cost issues, accelerate advanced reactor concept development, and support NRC regulatory processes as requested.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	90 % annual milestones met
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	On an ongoing basis, meet annual targets to enable industry to reduce operational costs and improve market competitiveness of existing Light Water Reactors (LWRs), and to expand commercial deployment of advanced reactors.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**Fuel Cycle R&D (FCR&D)** - Complete 90% of annual program milestones that advance fuel cycle technologies in order to support the enhanced availability, economics, safety, and security of nuclear-generated electricity in the United States.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	90 % annual milestones met
Result	**Met** - 99	**Met** - 98	**Met** - 94	**Met** - 96	**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 2017 Results (Action Plan if Not Met)	Completing 96% of FY17 milestones demonstrates that FCR&D is making progress with research and development towards its annual performance measure to support the long-term mission to develop options to the current commercial fuel cycle management strategy. FY17 results include: Completed milestones in Advanced Fuels contributed to significant advances in developing fuels with enhanced accident tolerance for existing U.S. commercial light water reactors. Material Recovery and Waste Form Development (MRWFD)-funded researchers supported a technical fact-finding meeting on recent DOE research activities related to corrosion and long-term performance of borosilicate high-level radioactive waste (HLW) glass in a repository environment, which has shown that the R&D activities DOE has conducted in the past few years in collaboration with international scientists have advanced the scientific understanding of HLW glass corrosion. Significant waste-form degradation process model along with other supporting models were developed and successfully integrated into a system model for assessing the long-term performance of generic geologic repositories. This activity is a major accomplishment for demonstrating integration of various scientific technologies and process models in the field of repository design and long-term performance. The Office of Nuclear Energy has furthered the design of railcars for the future transportation of spent nuclear fuel, developed documents to support the reduction in licensing risk for future interim storage facilities, pursued an understanding of how training of local safety officials could be implemented along future transportation routes, etc.						
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in signed quarterly performance memos from NE program DAS to NE COO. In addition to the memo, a copy of the documentation supporting each milestone is located in the INL Document Management System (DMS). Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned.						

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**Light Water Reactor Sustainability (LWRS)** - Complete 90% of annual program milestones to improve the reliability and economic performance of existing nuclear plants and further extend their operational life.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	90 % annual milestones met
Result	**Met** - 96	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	TBD	TBD
Endpoint Target	NE research, development, and demonstrations, will enable the continuing operation of light water reactors.						
Commentary on 2017 Results (Action Plan if Not Met)	In planning for FY 2018 and FY 2019, the program is actively transitioning to focus support to include more immediate concerns of the operating light water reactors as well as addressing long-term problems and solutions. In FY 2017, significant LWRS accomplishments include: (1) completed a materials irradiation campaign at Idaho National Laboratory's Advanced Test Reactor. Preliminary data from this experiment indicates that the brittle fracture temperature of reactor pressure vessel steels will be manageable for a majority of the U.S. pressurized water reactor fleet, (2) developed a novel approach to control room modernization that combines advanced human factors methods with unique laboratory facilities, which enables integration of new digital technologies into the current design of a given nuclear power plant control room (see June 2017 edition of Nuclear News), (3) completed a demonstration of large break loss of coolant accident (LOCA) safety margins for clad oxidation and peak clad temperature of a generic pressurized water reactor model based on the South Texas Project nuclear power plant and (4) as part of the effort to finalize plans for possible testing of single-stage turbine-pump system under beyond design basis conditions, attended and participated in the Terry Turbine Expanded Operating Band Committee meeting and ASME Standards Committee on Operation and Maintenance of Nuclear Power Plants conference (ASME/NRC 2017 Pump and Valve Symposium).						
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in signed quarterly performance memos from NE program DAS to NE COO. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	N/A	N/A
Result	**Met** - 91	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	N/A	N/A
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 2017 Results (Action Plan if Not Met)	The Consortium for Advanced Simulation of Light Water Reactors (CASL) successfully completed all FY 2017 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 a new capability development within VERA, or the Virtual Environment for Reactor Applications, with a focus on source term and validation, validation and verification work being performed across all focus areas with an emphasis on implementation, and completing Grid-to-Rod-Fretting work in FY 2017. In addition, deployment of VERA for industry applications have been continued with CASL test stands at the NuScale and AREVA and plans for FY 2018 test stand at NRC. Also as a result of the Hub's success, (Nuclear Energy Advanced Modeling and Simulation) NEAMS and Hub programs will be integrated into one overall modeling and simulation program beginning in FY 2018. The integration of all NE modeling and simulation activities within the NEAMS program will result in a stronger effort focused on the technical and scientific needs of the entire nuclear research community.						
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in signed quarterly performance memos from NE program DAS to NE COO. Milestone completions are documented in technical reports. The technical reports are listed in the signed quarterly performance memos for each milestone, and they are available upon request.						

Program	New Nuclear Generation Technologies						
Performance Goal (Measure)	**Nuclear Science User Facilities (NSUF)** - Complete 90% of annual program milestones in order to provide industry, universities, and national laboratories access to unique nuclear energy research capabilities and expertise not normally accessible to the nuclear energy user community.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	90 % annual milestones met
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	The Nuclear Science User Facilities (NSUF) represents a “prototype laboratory for the future,” promoting the use of unique nuclear research facilities and encouraging active university, industry, and laboratory collaboration in relevant nuclear science research. On an ongoing basis, the NSUF, through competitive solicitations, provides a mechanism for research organizations to collaborate, conduct experiments and post-experiment analysis, and utilize high performance computing at facilities not normally accessible to these organizations.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	90 % annual milestones met
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	An Endpoint Target cannot be developed at this time.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	1 complete program milestones	= 1 complete program milestones	= 1 complete program milestones	= 1 complete program milestones	= 1 complete program milestones	N/A	N/A
Result	**Met** - 1	**Not Met** - 0	**Met** - 1	**Met** - 1	**Met**	N/A	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 2017 Results (Action Plan if Not Met)	Completion of the selected FY17 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 toward enabling 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	Results are documented in signed quarterly performance memos from NE program DAS to NE COO. Documentation for completed milestones is attached to the performance memo.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	80 % availability	80 % availability	80 % availability	80 % availability	80 % availability	80 % availability	80 % availability
Result	**Not Met** - 64.2	**Not Met** - 77	**Not Met** - 77	**Met** - 82.6	**Not Met** - 76	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 2017 Results (Action Plan if Not Met)	Not met. Idaho Facility Availability was 76% for FY17 (average of Advanced Test Reactor (ATR) = 62% and Materials and Fuels Complex (MFC) = 91%), which did not meet the target of 80% availability. The ATR achieved 110.4 of 178.0 Effective Full Power Days (EFPDs) scheduled for the year, resulting in an operational efficiency of 62.0% for the year. 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. The cumulative facility availability for MFC in FY 2017 was 91% while research equipment availability was at 86%. MFC had a very successful year and was able to complete 95% of all milestones in FY 2017. These milestones met programmatic goals and objectives for programs including: Idaho Facilities Management, National & Homeland Security, Nuclear Science and Technology, and Naval Reactors. **Action Plan:** Continued focus on ATR Equipment Reliability and Plant Health should result in efficiency being maintained above 80%. Additionally, improvements in resource planning and overall outage planning need to occur to ensure outages can be executed as approved in the Integrated Strategic Operating Plan (ISOP).						
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by the Director Idaho Facilities Management, dated October 11, 2017, providing performance information of IFM Facility Availability and IFM Line Item Construction Projects for FY 2017.						

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 management 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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	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	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15.
Result	**Met** - 100	**Not Met** - 0.9	**Met** - 100	**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 2017 Results (Action Plan if Not Met)	Met. 100% of projects (1 out of 1) achieved cost performance indexes and schedule performance indexes between 0.9 and 1.15. Project update: At the end of FY17, the Remote-Handled Low-Level Waste (RHLLW) Disposal Project achieved approximately 94% completion. The delay in transfer of the facility from Areva Federal Services (AFS) has resulted in delays to readiness activities. Based on Battelle Energy Alliance's (BEA) letter of concern transmitted on April 7, 2017 to AFS invoking the contract clause relative to prosecution of work, AFS will cover BEA's construction oversight costs after October and until completion of all construction activities.						
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by the Director Idaho Facilities Management, dated October 11, 2017, providing performance information of IFM Facility Availability and IFM Line Item Construction Projects for FY 2017.						

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** - Increase the cumulative amount of DU&U packaged in a form suitable for disposition						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	56,901 metric tons	= 68,730 metric tons	93,624 metric tons	97,256 metric tons	88,721 metric tons	113,306 metric tons	140,126 metric tons
Result	**Not Met** - 46,030	**Not Met** - 68,624	**Not Met** - 79,232	**Not Met** - 80,221	**Not Met** - 88,306	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 837,616 metric tons of DU & U packaged for disposition.						
Commentary on 2017 Results (Action Plan if Not Met)	Paducah did not meet its processing goal due to problems with line #1. Line #1 recovery work was completed in September and available for re-start on 9/22/17. However with Hydrogen Generation Module (HGM) #4 out of service for repairs there was not enough hydrogen supply to operate all four lines. On 9/26/17 the site experienced a total power failure due to an issue with feed from TVA and the Fluor Deactivation Site. **Action Plan:** Restore all routine line operations. Determine likely sustainable annual rate. Adjust end of conversion date based on realistic estimates.						
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, EM maintains a variety of sources for validation and verification. The operating contractor formally reports monthly production in the Monthly Program Reviews. The operating contractor has the internal report of daily production that is used to report production in the Monthly Project Reviews. DOE oversight personnel are aware of operations and can identify issues if reported results are not as expected (based on DUF6 converted or number of oxide cylinders).						

Program	Nuclear Materials and Tank Waste						
Performance Goal (Measure)	**Enriched Uranium Packaged** - Increase the cumulative number of certified containers packaged and ready for long-term storage						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 ready for long-term storage.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The target for this metric has not increased from the prior year as work toward increasing the number of certified containers packaged and ready for long-term storage will occur beyond FY 2019.						
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, the U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management. EM also maintains a variety of sources for validation and verification of specific results for its performance metrics and this performance 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** - Increase the cumulative number of high level waste canisters packaged for disposition.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	4,476 canisters of high level waste	4,611 canisters of high level waste
Result	**Not Met** - 4,028	**Met** - 4,154	**Not Met** - 4,241	**Not Met** - 4,374	**Met** - 4,426	TBD	TBD
Endpoint Target	This measure has a life cycle estimate of 24,856 canisters packaged for disposition.						
Commentary on 2017 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 Project Management. EM also maintains shift reports from the Defense Waste Processing Facility 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** - Increase the cumulative volume of radioactive liquid waste (including other forms such as sludge) eliminated from inventory.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	6,993 thousand gallons	7,343 thousand gallons	7,592 thousand gallons	7,426 thousand gallons	7,684 thousand gallons	7,867 thousand gallons	8,811 thousand gallons
Result	**Not Met** - 6,133	**Not Met** - 6,592	**Not Met** - 6,863	**Not Met** - 7,342	**Not Met** - 7,414	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 102,045 thousands of gallons eliminated from inventory.						
Commentary on 2017 Results (Action Plan if Not Met)	The shortfall was caused by operational issues at several Savannah River Site (SRS) facilities, including a broken bearing water check valve in Tank 50, a Defense Waste Processing Facility (DWPF) bubbler change outage, low temperature in the DWPF pour spout, and a DWPF melter change outage. **Action Plan:** No life cycle impacts are anticipated. The Salt Waste Processing Facility (SWPF), which is expected to startup in December 2018, has a much greater waste treatment capacity than the existing liquid waste treatment facility. A new liquid waste contractor, which will come on board in May 2018, will complete the modeling process and update the Liquid Waste System Plan with revised targets based on the SWPF capacity.						
Documentation, Limitations, Methodology, Validation, and Verification	The EM Program uses 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** - Increase the cumulative number of liquid waste tanks closed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	11 tanks closed	13 tanks closed	15 tanks closed	15 tanks closed	15 tanks closed	15 tanks closed	15 Tanks Closed
Result	**Met** - 11	**Met** - 13	**Not Met** - 14	**Met** - 15	**Met** - 15	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 239 tanks closed.						
Commentary on 2017 Results (Action Plan if Not Met)	In FY17 SRS and ORP continued to work on achieving tank closures once all approvals have been granted.						
Comment	The target for this metric has not increased from the prior year as no tank closures are planned in FY 2018 or FY 2019. Progress toward increasing the number of liquid waste tanks closed extends beyond FY 2019.						
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. 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)	**Spent Nuclear Fuel Packaged for Final Disposition** - Increase the cumulative amount of heavy metal mass of spent nuclear fuel packaged and ready for final disposition.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	2,133 metric tons of heavy metal
Result	**Met** - 2,128	**Met** - 2,130	**Met** - 2,130	**Met** - 2,130	**Met** - 2,131	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 2,452 metric tons of heavy metal mass of spent nuclear fuel packaged and ready for final disposition.						
Commentary on 2017 Results (Action Plan if Not Met)	Idaho is making progress on meeting Idaho Settlement Agreement milestones in the near term (2023 milestone). . Idaho is working to establish a capability for packaging spent nuclear fuel using existing facilities and infrastructure.						
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.						

Waste Management

Program	Waste Management						
Performance Goal (Measure)	**Legacy and Newly Generated LLW and Mixed LLW Disposed** - Increase the cumulative amount of legacy and newly generated low-level and mixed low-level waste disposed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	1,356,517 cubic meters	1,369,695 cubic meters
Result	**Met** - 1,265,992	**Not Met** - 1,292,571	**Met** - 1,315,101	**Not Met** - 1,330,550	**Exceeded** - 1,343,369	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 1,591,780 cubic meters disposed.						
Commentary on 2017 Results (Action Plan if Not Met)	Sites which contributed to exceeding the Target include: Idaho, Los Alamos national Laboratory, Oak Ridge, Portsmouth, Hanford, Savannah River, and West Valley.						
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. The EM Program uses shipping manifests for the transport of waste to verify and validates this metric. The sites get receipts from the disposal facilities that match the manifests.						

Program	Waste Management						
Performance Goal (Measure)	**Transuranic Waste Dispositioned** - Increase the cumulative amount of transuranic (TRU) waste (consisting of Remote Handled TRU and Contact Handled TRU) dispositioned.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	97,858 cubic meters	= 102,591 cubic meters	102,591 cubic meters	102,026 cubic meters	103,750 cubic meters	107,456 cubic meters	128,107 cubic meters
Result	**Not Met** - 96,016	**Not Met** - 99,179	**Not Met** - 102,026	**Met** - 103,442	**Exceeded** - 104,068	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 150,026 cubic meters of TRU waste dispositioned.						
Commentary on 2017 Results (Action Plan if Not Met)	WIPP re-opened in January 2017 after being shutdown for three years due to accidents. Shipment of TRU waste to WIPP for disposal began in April 2017. Shipments are steadily being made at a rate of approximately 6 shipments per week.						
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. The EM Program uses shipping manifests for the transport of waste to verify and validates this metric						

Site Restoration

Program	Site Restoration						
Performance Goal (Measure)	**Geographic Sites Completed** - Increase the cumulative number of sites completed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	90 sites	91 sites	91 sites	91 sites	91 sites	91 sites	91 sites
Result	**Met** - 90	**Met** - 91	**Met** - 91	**Met** - 91	**Met** - 91	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 107 geographic sites completed in their entirety.						
Commentary on 2017 Results (Action Plan if Not Met)	The EM Program is conducting activities at the remaining 16 geographic sites to allow completion of cleanup by the planned deadlines.						
Comment	A site is completed when active remediation has concluded in accordance with the terms and conditions of the sites' cleanup agreements (e.g., Records of Decision and permits). Stewardship or non-EM activities may be ongoing after site completion. The target for this metric has not increased from the prior year because there are not sites targeted for completion in FY 2018 or FY 2019.						
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits.						

Program	Site Restoration						
Performance Goal (Measure)	**Industrial Facilities Completed** - Increase the cumulative number of industrial facilities completed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	1,961 facilities	2,070 facilities	2,107 facilities	2,119 facilities	2,162 facilities	2,184 facilities	2,217 facilities
Result	**Met** - 2,128	**Met** - 2,095	**Met** - 2,109	**Met** - 2,144	**Not Met** - 2,157	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 4,202 facilities completed.						
Commentary on 2017 Results (Action Plan if Not Met)	The remaining industrial facilities, which are at the Hanford Site, are small attachments to the main processing facility (234-5Z) and will be demolished in parallel with 234-5Z. **Action Plan:** The remaining, small industrial facilities will be demolished in parallel with 234-5Z.						
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, the U.S. Environmental Protection Agency, State environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Project Management. 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 reports.						

Program	Site Restoration						
Performance Goal (Measure)	**Nuclear Facilities Completed** - Increase the cumulative number of nuclear facilities completed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	131 facilities	138 facilities	153 facilities	160 facilities	157 facilities	157 facilities	165 facilities
Result	**Met** - 131	**Met** - 146	**Not Met** - 151	**Not Met** - 151	**Not Met** - 152	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 487 facilities completed.						
Commentary on 2017 Results (Action Plan if Not Met)	Three of the five buildings are at Richland; building 242-Z is awaiting Facility Status Change to claim completion and the other two are being demolished. The remaining two facilities, one at Oak Ridge and one at SPRU will be completed in FY 2018. **Action Plan:** The remaining facilities will be demolished in FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM maintains a variety of sources for validation and verification of specific results for this metric: Decommissioning Project Final Report as well as state and federal regulator acceptance of completion report.						

Program	Site Restoration						
Performance Goal (Measure)	**Radioactive Facilities Completed** - Increase the cumulative number of radioactive facilities completed.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	534 facilities	561 facilities	563 facilities	581 facilities	577 facilities	579 facilities	591 facilities
Result	**Met** - 555	**Met** - 561	**Met** - 565	**Not Met** - 567	**Not Met** - 571	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 955 facilities completed.						
Commentary on 2017 Results (Action Plan if Not Met)	Five of the remaining radioactive facilities are located at Richland. One is located at the Idaho Site. **Action Plan:** The five remaining facilities at the Hanford Site are attached to the main processing facility (234-5Z) and will be demolished in parallel with 234-5Z. At Idaho the contractor plans to remove the building during FY 2020.						
Documentation, Limitations, Methodology, Validation, and Verification	To validate and verify program performance, the EM program conducts various internal and external reviews and audits. EM maintains a variety of sources for validation and verification of specific results for this metric: Decommissioning Project Final Report as well as state and federal regulator acceptance of completion report.						

Program	Site Restoration						
Performance Goal (Measure)	**Remediation Completed** - Increase the cumulative number of release sites remediated.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	7,627 release sites	8,035 release sites	8,201 release sites	8,340 release sites	8,205 release sites	8,339 release sites	8,427 release sites
Result	**Met** - 7,849	**Not Met** - 7,945	**Not Met** - 8,047	**Not Met** - 8,159	**Exceeded** - 8,258	TBD	TBD
Endpoint Target	This metric has a life cycle estimate of 11,713 release sites remediated.						
Commentary on 2017 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. 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	= 89 activities	= 89 sites	= 90 sites	= 90 sites	= 93 Sites	97 Sites	100 sites
Result	**Met** - 89	**Met** - 89	**Met** - 90	**Met** - 91	**Not Met** - 92	TBD	TBD
Endpoint Target	Inspections will continue indefinitely. Inspection of 100 percent of the sites will continue to be the goal.						
Commentary on 2017 Results (Action Plan if Not Met)	A site, Bear Creek, WY, projected to transition to LM within FY 2017. The delay in transfer to LM was primarily due to delays caused by the Nuclear Regulatory Commission (NRC), and the NRC's work involving the current site licensee. **Action Plan:** The Bear Creek, WY site is now scheduled to transition in FY2019. During the week of April 9, 2018, LM Senior Management had very productive meeting with the NRC last week in Washington, DC and were able to sign the site Transfer Protocol. Also, during the meeting, LM and NRC also discussed strategic steps to overcome difficulties with the transition of WY sites and other sites.						
Documentation, Limitations, Methodology, Validation, and Verification	LM Blue Book - This is the Annual LM Site Management Guide that details the sites that have been transitioned to LM and when sites are scheduled to transition to LM.						

Program	Legacy Management						
Performance Goal (Measure)	**Surveillance and Maintenance Cost** - Reduce the cost of performing long-term surveillance and monitoring (LTS&M) 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	2 percent reduction	2 percent reduction	≥ 2 percent reduction	≥ 2 percent reduction	≥ 2 percent reduction	≥ 2 Percent Reduction	≥ 2 percent reduction
Result	**Met** - 11.8	**Exceeded** - 7.9	**Met** - 2	**Met** - 14.4	**Met** - 2	TBD	TBD
Endpoint Target	Achieve a 2 percent reduction below the baseline each year.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly Post-Competition Accountability Report (PCAR) submittals. This report details, on a Quarterly basis, LM's success in reducing the costs of LTS&M.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Target met. Achieved operating time was 99.2% of scheduled operating time.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly and EOY: This 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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 new efforts in Quantum Information Sciences.	Support at least two partnerships in quantum information science.
Result	**Met**	**Met**	**Met**	**Met**	**Met**	TBD	TBD
Endpoint Target	Develop and deploy high-performance computing hardware and software systems through exascale platforms						
Commentary on 2017 Results (Action Plan if Not Met)	Target met. Funded one laboratory led Mathematical Multifaceted Integrated Capability Center (MMICC) team.						
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 are 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Target met. Cost variance 0% and schedule variance 8%.						
Documentation, Limitations, Methodology, Validation, and Verification	BES Projects include those that have an approved performance baseline at the start of FY 2017: NEXT and LCLS-II. Supporting data reside in the DOE Office of Project Management'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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	Through the "electrolyte genome," demonstrate a framework for designing new electrolytes using structure-chemical trends extracted from >10,000 first-principles calculated molecular motifs, modifications and mutations.	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	N/A
Result	N/A	N/A	**Met**	**Met**	**Met**	N/A	N/A
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 2017 Results (Action Plan if Not Met)	Target met. JCESR has developed and demonstrated energy storage research prototypes that are scalable for transportation and grid prototypes using concepts beyond lithium ion technology, as identified through materials discovery and techno-economic modeling.						
Documentation, Limitations, Methodology, Validation, and Verification	The DOE Energy Innovation Hub for Batteries and Energy Storage - the 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). The end-of-project-cycle cost goal for JCESR's cost is $100/kWh, which is 1/5 the commercial baseline 2011 cost of $500/kWh (cost of the Nissan Leaf battery).						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Target met. Achieved operating time was 100% of scheduled operating time. (31,278 actual hours versus 31,200 planned 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 FY 17 for this goal is obtained from the planned operating hours of these individual user facilities in FY17: National Synchrotron Light Source II (NSLS-II) 4,500; Stanford Synchrotron Radiation Lightsource (SSRL) 5,100; Advanced Light Source (ALS) 4,900; - Advanced Photon Source (APS) 5,000; Linac Coherent Light Source (LCLS) 3,000; High Flux Isotope Reactor (HFIR) 3,900; and the Spallation Neutron Source (SNS) 4,800 for a total of 31,200 hours (90% is 28,080 hours).						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	Expand computational materials and chemical discovery through increased data production and additional online computational resources: add electronic properties data for 7,000 compounds, elastic properties data for 3,000 compounds and reaction energies for 10,000 catalytic reactions to publicly available databases; add new or expanded functionality to on-line, high performance computer software/codes for prediction of materials properties.	Expand computational materials and chemical discovery through increased data production and open source software: add 2000 adsorption energies for chemicals in nanoporous materials to publically available databases; add new or expanded functionality to 10 online, high performance computer software/codes for prediction of materials and chemical properties.
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	Understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels						
Commentary on 2017 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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 Model for Prediction Across Scales - Ocean (MPAS-Ocean).	Demonstrate in the coupled DOE-E3SM model, the importance of environmental factors in affecting ecosystem productivity and surface energy exchanges.
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 2017 Results (Action Plan if Not Met)	Target met. A summary report documenting the progress of extending the DOE Earth System Model to simulate how human and natural systems interact to affect the carbon and water cycles is here: https://climatemodeling.science.energy.gov/about/fy-2017-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/						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	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.	Develop metagenomics approaches to assess the functioning of microbial communities in the environment.
Result	N/A	N/A	**Met**	**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 2017 Results (Action Plan if Not Met)	Target met. A summary of progress to develop improved open access platforms for analysis of large genomic datasets is located at: https://kbase.us/wp-content/uploads/2017/10/FY17_KBase_Performance_Metrics_Summary_Report.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 https://kbase.us/doe-metrics-2017/						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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 tools of the devices, joint teams will work to strengthen the basis for extrapolation of these regimes to ITER and other future fusion devices.	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. Dependence of response to multiple plasma parameters will be explored in order to gain confidence in predictive capability of the models.	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 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.	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, 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	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 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	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. Alfven eigenmode instabilities can cause the redistribution or loss of fast ions and driven 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 Alfven eigenmode activity will be used to determine the threshold for significant fast ion	Conduct research to understand the role of neutral fueling and transport in determining the pedestal structure. The edge pedestal is a key component in achieving overall high confinement in a magnetic fusion device. Therefore, obtaining a physics understanding and predictive capability for the pedestal height and structure is a major goal of fusion research and requires advances in the understanding of the separate structure of density and temperature profiles in the pedestal region. A key challenge is to understand the importance of particle sources in determining the density pedestal and project to burning plasma scenarios. Experiments on DIII-

				precursors and quantify the effects of disruptions.	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 essential data to test and validate leading boundary plasma models.	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 fast ion density, in order to validate models and improve understanding of underlying mechanisms. Model predictions will guide the development of attractive operating regimes.	D and archived data from C-Mod, DIII-D, and NSTX will be used to test how fueling, reduced recycling, and transport affect the density pedestal structure. The role of divertor geometry and its effect upon the pedestal structure will also be investigated. U.S. researchers involved in collaborative activities on other relevant experiments may also contribute to this effort.
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 2017 Results (Action Plan if Not Met)	Target met. The physics of divertor operation on tokamaks was studied through analysis of data taken previously on NSTX/NSTX-U and C-Mod was completed, along with analysis of the results of new experiments on DIII-D. A variety of conditions and configurations were explored to assess the impact of edge magnetic configurations and divertor geometries on divertor conditions and dissipative regimes, as well as their effect on the width of the power exhaust channel. Data to test boundary plasma models were obtained and a final joint report summarizing the major findings was prepared.						

Documentation, Limitations, Methodology, Validation, and Verification	Supporting 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Met**	**Met**	**Not 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 2017 Results (Action Plan if Not Met)	Target met. Achieved operating time was 104% of planned operating time. (704 actual operating hours verses 680 hours of planned operations.)						
Documentation, Limitations, Methodology, Validation, and Verification	Supporting 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 (680 hours of operations are planned for DIII-D); - the National Spherical Torus Experiment - Upgrade at the Princeton Plasma Physics Laboratory. (There are no operations planned for NSTX-U this fiscal year due to the shutdown of the facility for repairs.); - the Alcator C-Mod Tokamak at the Massachusetts Institute of Technology (There are no operations planned for Alcator C-Mod this fiscal year due to the scheduled shutdown of the facility.) 680 hours total (baseline) are expected for FY17.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	Carry out advanced simulations to address two of the most problematic consequences of major disruptions in tokamaks: the generation and subsequent loss of high-energy electrons (runaway electrons), which can damage the first wall, and the generation of large electromagnetic loads induced by disruptions. Assess the severity of these effects on ITER.	Understanding alpha particle confinement in ITER, the world's first burning plasma experiment, is a key priority for the fusion program. Linear instability trends and thresholds of energetic particle-driven shear Alfvén eigenmodes in ITER are determined for a range of parameters and profiles using a set of complementary simulation models (gyrokinetic, hybrid, and gyrofluid). Initial nonlinear simulations are carried out to assess the effects of the unstable modes on energetic particle transport.	Perform massively parallel plasma turbulence simulations to determine expected transport in ITER. Starting from best current estimates of ITER profiles, the turbulent transport of heat and particles driven by various microinstabilities (including electromagnetic dynamics) will be computed. Stabilization of turbulence by nonlinear self-generated flows is expected to improve ITER performance, and will be assessed with comprehensive electromagnetic gyrokinetic simulations.	Predicting the magnitude and scaling of the divertor heat load width in magnetically confined burning plasmas is a 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.	Lower hybrid current drive (LHCD) will be indispensable for driving off-axis current during long-pulse operation of future burning 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	The interaction of the boundary plasma with the material surfaces in magnetically confined plasmas is 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.	Understanding the relevant turbulent transport mechanisms at the edge of a high-performance tokamak is essential for predicting and optimizing the H-mode pedestal structure in future burning plasma devices. Global electromagnetic gyrokinetic simulations will be performed based on representative experimental pedestal scenarios in order to clarify which instabilities are most important for each of the particle and heat transport channels. Edge transport modeling will be performed in order to estimate and bound the particle and heat sources—e.g., the ionization density source and the atomic energy loss channels due to ionization, charge exchange, and

					simulation predictions will be compared with experimental data from the superconducting EAST tokamak.		radiation. Comparisons will be made with data from the DIII-D, JET, C-Mod and NSTX or MAST experiments.
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 2017 Results (Action Plan if Not Met)	Target met. Simulations with both strong and weak damping using 4095 nodes were performed on the Edison supercomputer at NERSC. Good convergence between the TorLH lower hybrid code and the CQL3D Fokker Planck code were obtained in both cases. The converged results agreed with the ray tracing / Fokker Planck predictions from GENRAY / CQL3D simulations but disagree with experimental measurements from the EAST superconducting tokamak. The agreement obtained between simulations with high-fidelity full-wave models and reduced ray tracing models has verified the accuracy of these codes. Discrepancies between simulation and experiment in certain conditions will be explored further.						
Documentation, Limitations, Methodology, Validation, and Verification	Supporting 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Target met. Cost variance 4%; schedule variance 3%.						
Documentation, Limitations, Methodology, Validation, and Verification	Derived from PARS II data 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) 7. Large Underground Xenon (LUX)–ZonEd Proportional scintillation in LIquid Noble gases (ZEPLIN) experiment (LZ) 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %	≥ 80 %
Result	**Not 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 2017 Results (Action Plan if Not Met)	Target met. Achieved operating time was 111% of planned operating time. (7,096 actual operating hours vs 6,380 planned operating hours.)						
Documentation, Limitations, Methodology, Validation, and Verification	Derived from letters from Lab Directors or designee. Fermi data are reported at http://programplanning.fnal.gov/quarterly-accelerator-operations-reports/. The scientific user facilities and scheduled hours: - Total hours scheduled is 6,380 hours (5,104 hours is 80%). - FACET (Facility for Advanced Accelerator Experimental Tests) will not be operating in FY2017. - Fermilab Accelerator Complex is scheduled to run 4,320 hours in FY 2016 (3,456 is 80%). - Brookhaven ATF (Accelerator Test Facility) is scheduled to run 2,060 hours in FY 2016 (1,648 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	Measure the mixing angle between muon neutrinos and electron neutrinos (sin2(2θ13) by measuring the disappearance of electron antineutrinos with the Daya Bay Reactor Experiment. This measurement should have a 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 (sin2(2θ13)) 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. I	NOvA will present important results on whether neutrino mixing is “maximal” and the mass ordering of neutrino states. MicroBooNE will address the low-energy anomalies observed in neutrino interactions. First results from ICARUS will be presented.
Result	**Met**	**Met**	**Not Met**	**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 2017 Results (Action Plan if Not Met)	Target met. Fermilab has switched operations mode from neutrino beam to antineutrino beam delivery to the NOvA experiment. NOvA has begun accumulating physics data in antineutrino mode.						
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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %	N/A	< 10 %
Result	**Met**	**Met**	**Met**	**Met**	**Met**	N/A	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 2017 Results (Action Plan if Not Met)	Target met. For the 12 GeV CEBAF Upgrade the cost variance was 4% and the schedule variance 0%.						
Documentation, Limitations, Methodology, Validation, and Verification	Derived from the Monthly Report preceding the end of the quarter for the following projects: - 12 GeV CEBAF Upgrade Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project. The EOY report is based on PARS II data through the end of August. The supporting documentation resides in the files of the NP (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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Target met. Achieved operating time was 104% of scheduled operating time. (10,924 actual operating hours vs. 10,530 planned operating hours.)						
Documentation, Limitations, Methodology, Validation, and Verification	The total planned operating hours for ATLAS, CEBAF, and RHIC is 10,530 hours (80% is 8,424 hours). Quarterly: Emails from ANL (ATLAS), BNL (RHIC) and JLAB (CEBAF) 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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.	Initiate a search for a Critical Point in the Phase Diagram of Nuclear Matter.
Result	**Met**	**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 2017 Results (Action Plan if Not Met)	Target met. The first Cryogenic Underground Observatory for Rare Events (CUORE) detector tower operated at Laboratori Nazionali del Gran Sasso (LNGS) in Italy and has improved the sensitivity for neutrinoless double-beta decay measurement by a factor of 7.						
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly: Emails from ORNL and LBNL Management to NP Office with progress towards achieving goals. EOY: Official letter from ORNL and LBNL 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 FY17 target is met when either ORNL or LBNL demonstrate the capability with either the CUORE or the MJD experiment to extend the sensitivity of searches for neutrinoless double-beta decay by at least a factor of 5 in lifetime.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %	≥ 70 %	N/A
Result	**Met** - 70	**Met** - 70	**Met** - 100	**Met** - 100	**Met** - 100	TBD	N/A
Endpoint Target	On an ongoing basis, annually commit ≥70% of award funding within 45 days of announcement of award selections.						
Commentary on 2017 Results (Action Plan if Not Met)	In FY17, per target, 100% 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 FY17 (e.g., NEXTCAR, REFUEL, ROOTS, ENLITENED, PNDIODES, CIRCUTS, and MARINER).						
Comment	ARPA-E is proposed for elimination in the FY 2018 Budget. However, since Congress appropriated FY 2018 funds, a performance target has been set for FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	Data Sources: ARPA-E Internal Records. Available funding and actual obligations are pulled from the DOE STARS financial system. Limitations: No substantive limitations. Verification and Validation: ARPA-E internal records are reconciled to STARS data on a monthly basis post-GL close.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 3 new companies founded	≥ 3 new companies founded	≥ 3 new companies founded	≥ 3 new companies founded	N/A
Result	N/A	N/A	**Met**	**Met**	**Met**	TBD	N/A
Endpoint Target	On an ongoing basis, ARPA-E funding will support the formation of ≥ 3 new companies each year.						
Commentary on 2017 Results (Action Plan if Not Met)	As reported in a February 2017 press release, ARPA-E funded research has led to the formation of at least 56 new companies. ARPA-E expects this trend to continue at the rate of 3 company formations per year. ARPA-E will continue to monitor this metric and report an updated total in a February 2018 press release.						
Comment	ARPA-E is proposed for elimination in the FY 2018 Budget. However, since Congress appropriated FY 2018 funds, a performance target has been set for FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	Data Sources: New company formation is initially identified through various online channels (e.g., company websites, Pitchbook database) and through direct outreach to appropriate project team members (e.g., Awardee / Principal Investigator, Program Director, T2M Advisor, Tech SETA). The data is compiled annually in February. Limitations: Potentially incomplete or erroneous information provided from the performers. ARPA-E mitigates this risk by cross-checking the data through multiple sources. Verification and Validation: Cross-check the data through multiple sources (e.g., company websites, Pitchbook database, awardee, etc.)						

Chief Information Officer

Departmental Administration

Program	Departmental Administration						
Performance Goal (Measure)	**Detect - Anti-Phishing** - Performance of Anti-Phishing measurements must be greater than or equal to 90% on at least 5 of 7 capabilities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 5 capabilities greater than 90 %	≥ 5 capabilities greater than 90%	≥ 5 capabilities greater than 90%	≥ 5 capabilities greater than 90%	≥ 5 capabilities greater than 90%
Result	N/A	N/A	**Not Met** - 3	**Not Met** - 2	**Met** - 6	TBD	TBD
Endpoint Target	Obtain performance of at least 5 of 7 anti-phishing capabilities at 90% or greater in FY 2017 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	A total of 6 out of the 7 anti-phishing capabilities had a FY 2017 performance result of greater than 90%.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Program	Departmental Administration						
Performance Goal (Measure)	**Detect - Malware Defense** - Performance of malware defense measurements must be greater than or equal to 90% on at least 3 of 5 capabilities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%	≥ 3 capabilities greater than 90%
Result	N/A	N/A	**Not Met** - 0	**Not Met** - 0	**Met** - 3	TBD	TBD
Endpoint Target	Obtain a performance of at least 3 of 5 malware defense capabilities at 90% or greater in FY 2017 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	A total of 3 out of the 5 anti-phishing capabilities had a FY 2017 performance result of greater than 90%.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Program	Departmental Administration						
Performance Goal (Measure)	**Detect - Other Defenses** - Performance of "Other Defenses" measurements to include specific Anti-Phishing and Malware capabilities must be greater than or equal to 90% on at least 2 of 4 capabilities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%	≥ 2 capabilities greater than 90%
Result	N/A	N/A	**Not Met** - 0	**Not Met** - 1	**Met** - 2	TBD	TBD
Endpoint Target	Obtain a performance of at least 2 of 4 other defense capabilities at 90% or greater in FY 2017 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	A total of 2 out of the 4 anti-phishing capabilities had a FY 2017 performance of greater than 90%.						
Comment	The Other Defenses performance measure consists of the following Anti-Phishing and Malware capabilities: privileged user network accounts that have a technical control limiting access to only trusted sites, inbound network traffic that passes through a web content filter, which provides anti-phishing, anti-malware, and blocking of malicious websites (e.g., fake software updates, fake antivirus offers, and phishing offers), outbound communications traffic checked at the external boundaries to detect encrypted exfiltration of information (i.e. D/A's capability to decrypt/interrogate and re-encrypt), and email messages processed by systems that quarantine or otherwise block suspected malicious traffic.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Program	Departmental Administration						
Performance Goal (Measure)	**Identify - Hardware Asset Management** - Achieve performance of 95% or greater for both Hardware Asset Management metrics (asset detection and asset meta data collection)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result	N/A	N/A	**Not Met** - 87	**Not Met** - 60	**Not Met** - 85	TBD	TBD
Endpoint Target	Annually maintain performance of at least 95% for both Hardware Asset Management metrics by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The capability of hardware assets being covered by an automatic hardware asset meta data collection exceeded the performance goal with an actual FY 2017 EOY of 97%. However, the capability of implementing a technology solution to detect and alert on the connection of unauthorized hardware assets in an unclassified network (i.e., asset detection) was not met with an actual FY 2017 EOY result of 85%. **Action Plan:** The OCIO is working with affected sites to address the unmet capability of implementing a technology solution to detect and alert on the connection of unauthorized hardware assets in an unclassified network and anticipates reaching the target by Q3 FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Program	Departmental Administration						
Performance Goal (Measure)	**Identify - 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result	N/A	N/A	**Not Met** - 39	**Not Met** - 44	**Not Met** - 91	TBD	TBD
Endpoint Target	Obtain performance of at least 95% for both Software Asset Management metrics by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The capability of endpoints and mobile assets being covered by an automated software asset inventory exceeded the performance goal with an actual FY 2017 EOY of 98%. However, the capability of endpoints and mobile assets being covered to detect, alert, and/or block unauthorized software from executing (i.e., Software White-Listing) was not met with an actual FY 2017 EOY result of 91%. **Action Plan:** The OCIO is working with affected sites to address the unmet capability of endpoints and mobile assets being covered to detect, alert, and/or block unauthorized software from executing and anticipates reaching the target by Q1 FY 2018.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - Federated Identity Management Infrastructure** - Implement Federated Identity Management Infrastructure linking identity sources across DOE to OneID						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	75 %	95 %	95 %
Result	N/A	N/A	N/A	N/A	**Not Met** - 62	TBD	TBD
Endpoint Target	Obtain performance of at least 95% of all identity sources across DOE linked to OneID by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The goal of achieving 75% for the Federated Identity Management Infrastructure linking identity sources across DOE to OneID was not met due to delays in completion of the onboarding process that is underway for five sites and the implementation of a more extensive outreach program required to onboard an additional five sites. **Action Plan:** The goal of the Continuous Diagnostics and Mitigation program out of DHS (CDM) Phase 2 is to identify all individuals that are on DOE managed networks. DOE has decided to implement the CDM virtual directory tool to support CDM Phase 2. DOE will extend the value of this tool to facilitate federation of additional identity sources at the enterprise level. This will enable rapid integration of additional identity sources in support of the overall Federated Identity Management goals.						
Documentation, Limitations, Methodology, Validation, and Verification	Measure is generated by calculating the percentage of integrated entities out of the total number of DOE entities. Data is validated by OneID team prior to providing the number of integrated entities. Current limitations are related to the number of participating entities. Of the 78 DOE entities, five are networks and are, therefore, not in scope for this metric. The DOE CIO will issue a Memorandum mandating participation by all entities by end of FY 18.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - High-Priority Application Authentication** - Conduct a role-based risk assessment for all applications supporting high priority (FISMA) systems, identify the proper credential for each role within the application in accordance with the revised NIST 800-63 standard, and require the use of the proper credential for role-based access to the application.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	10 %	30 %	50 %
Result	N/A	N/A	N/A	N/A	**Not Met** - 0	TBD	TBD
Endpoint Target	Require the credential identified through the role based risk assessment for 80% of all applications supporting FISMA systems by FY 2021 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The goal of achieving 10% for the High Priority Enabled-Ready Applications measure was not met due to delays in implementing the process to account for use of MFA to access FISMA moderate and high systems. A number of applications have been upgraded to required MFA to meet this goal but the process to track conformance has not been implemented to date. The FISMA database contains applications aggregated under a system and not separately identified which will require modification to the FISMA feeder reports to add itemization of the supporting FISMA moderate and high applications and to the status of MFA adoption for these applications. **Action Plan:** The application inventory data call will be issued by IM-20 in December 2017 with responses due back from the system owners in January 2018. Based on the collected data, the complete list of applications contained within FISMA moderate and high systems will be available. The inventory will identify which applications are currently using MFA as well as identify outstanding applications that will require MFA enforcement.						
Documentation, Limitations, Methodology, Validation, and Verification	Measure is generated by calculating the percentage of MFA enabled applications contained within the moderate and high FISMA systems. Current limitations are related to identifying and prioritizing target applications for integration. Efforts are underway to expand the data collected through FISMA to include information about applications contained within moderate and high systems and their use of MFA.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - MFA - Privileged Network Account performance** - Privileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 100%.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	100 %	100 %	100 %	100 %	100 %
Result	N/A	N/A	**Not Met** - 7	**Not Met** - 82	**Not Met** - 96	TBD	TBD
Endpoint Target	Achieve an LOA4 performance of 100% for Privileged Network Accounts by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The goal of 100% MFA for privileged network accounts were not met largely due to delays in issuing Program Level guidance to align site plans with the Departmental goals and objectives as well as awaiting certification for currently deployed LoA 4 solutions, which has been underway for over 6 months. **Action Plan:** Following MFA IG audit of August 2017, OCIO is working with Program Offices and sites to address the development of implementation plans including budget priorities, communications, contractual requirements, and any outstanding policy and guidance.						
Documentation, Limitations, Methodology, Validation, and Verification	Measure is collected through eCPIC. A number of sites are awaiting NNSA guidance to begin to implement LoA 4 or need more time to achieve LoA 4 for their privileged user population. Issuance of the NNSA supplemental directive (SD) is imminent. NNSA sites are required to develop Plan of Actions and Milestones (POA&Ms) for those sites that have not achieved 100% LoA 4 for privileged and/or standard network accounts. Pacific Norwest National Laboratory (PNNL) is awaiting NIST certification for Yubikey 4 to meet the LoA requirement; certification is anticipated January 2018.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - MFA - Unprivileged Network Account performance** - Unprivileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 85%.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	85 %	85 %	85 %	85 %	85 %
Result	N/A	N/A	**Not Met** - 11	**Not Met** - 52	**Not Met** - 66	TBD	TBD
Endpoint Target	Achieve an LOA4 performance of 85% for Unprivileged Network Accounts by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The goal of 85% MFA for unprivileged network accounts were not met largely due to delays in issuing Program Level guidance to align site plans with the Departmental goals and objectives as well as awaiting certification for currently deployed LoA 4 solutions, which has been underway for over 6 months. **Action Plan:** Following MFA IG audit of August 2017, OCIO is working with Program Offices and sites to address the development of implementation plans including budget priorities, communications, contractual requirements, and any outstanding policy and guidance.						
Documentation, Limitations, Methodology, Validation, and Verification	Measure is collected through eCPIC. A number of sites are awaiting NNSA guidance to begin to implement LoA 4 or need more time to achieve LoA 4 for their privileged user population. Issuance of the NNSA supplemental directive (SD) is imminent. NNSA sites are required to develop Plan of Actions and Milestones (POA&Ms) for those sites that have not achieved 100% LoA 4 for privileged and/or standard network accounts. Pacific Norwest National Laboratory (PNNL) is awaiting NIST certification for Yubikey 4 to meet the LoA requirement; certification is anticipated January 2018.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - Secure Configuration Management** - Achieve performance of greater than or equal to 95% for Secure Configuration Management						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result	N/A	N/A	**Not Met** - 91	**Not Met** - 77	**Met** - 99	TBD	TBD
Endpoint Target	Obtain performance of at least 95% for Secure Configuration Management by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The Secure Configuration Management capability met and exceeded the FY17 goal of 95%.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - Standards Based Fed Access Mgmt Infrastructure** - Implement Standards Based Federated Access Management Infrastructure across DOE to enable single sign-on						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	50 %	95 %	95 %
Result	N/A	N/A	N/A	N/A	**Met** - 51	TBD	TBD
Endpoint Target	Implement Standards Based Federated Access Management across 95% of DOE by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Measure is generated by calculating the percentage of entities where the federation software has been installed and is available to integrate applications. The DOE CIO will issue a Memorandum mandating participation in the OneID Identity Management efforts by all entities by end of FY 18. The infrastructure and connections will be established to enable Standards Based Federated Access Management at sites to integrate local applications into the local sites and enterprise applications into the enterprise federated access management solution.						

Program	Departmental Administration						
Performance Goal (Measure)	**Protect - Vulnerability Management** - Achieve performance greater than or equal to 95% for the detection of hardware and software vulnerability and weakness management						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %	≥ 95 %
Result	N/A	N/A	**Not Met** - 31	**Not Met** - 64	**Met** - 99	TBD	TBD
Endpoint Target	Obtain performance of at least 95% for Vulnerability Management by FY 2018 and maintain annually thereafter.						
Commentary on 2017 Results (Action Plan if Not Met)	The Vulnerability and Weakness Management capability met and exceeded the FY17 goal of 95%.						
Comment	The Vulnerability Management performance measure involves the detection of hardware and software vulnerabilities and specifically addresses the organization's unclassified network(s) assessed for vulnerabilities using Security Content Automation Protocol (SCAP) validated and similar scanning products.						
Documentation, Limitations, Methodology, Validation, and Verification	Initial measures are submitted by Departmental Elements via the quarterly Federal Information Security Modernization Act (FISMA) data call and forwarded to the program offices via spreadsheet. All sites provide results via multiple means (e.g., network scans, system architecture documents, Excel files) in response to FISMA CIO metrics set by OMB each fiscal year. All results are collected and validated for completeness by IM-24 and IM-30. Potential limitations are inconsistent and incomplete reporting as well as clear and consistent interpretation of the questions across Departmental Elements.						

Office of Management

Program	Departmental Administration						
Performance Goal (Measure)	**Achieve Cost-Savings** - Promote management and operational excellence by streamlining operations and reducing costs. Promote a corporate approach (including the National Laboratories) for moving from a transactional strategic sourcing approach to a more robust Category Management concept to achieve at least a 4% cost savings/avoidance target against actionable procurement spending on products and services through the increased utilization of Best-in-Class (BIC) vehicles						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	195 $M Cost Savings	> 247 $M Cost Savings	> 261 $M Cost Savings	> 269.5 $M Cost Savings	292.4 $M Cost Savings	321 $M Cost Savings	326 $M Cost Savings
Result	**Met** - 223.7	**Met** - 295.5	**Met** - 380.8	**Met** - 441.4	**Exceeded** - 473.6	TBD	TBD
Endpoint Target	Annually achieve 4% cost savings target against actionable procurement spend on products and services.						
Commentary on 2017 Results (Action Plan if Not Met)	$473.6 Fully met and exceeded						
Documentation, Limitations, Methodology, Validation, and Verification	Data Source: The data is provided by two entities – Federal: The basic contract and the pricing for the supplies or services associated with that contract. That data is stored in the Department of Energy (DOE) Strategic Integrated Procurement Enterprise System (STRIPES). Contractors: Within the National Nuclear Security Administration (NNSA) and Environmental Management (EM), the savings are generated and reported by the Supply Chain Management Center (SCMC). Those not participating in the SCMC (NNSA/EM)), use contractor site specific software to capture their spend data. Result: The reporting process was formalized in October 2011 by Senior Procurement Executive (SPE) memorandum establishing a standard set of definitions and report format. The reporting template and definition was updated in through Policy Flash (2014-16), which provided clarification on what is considered strategic sourcing savings as well as provide some examples. Limitations: The key limitation is the lack of a true enterprise wide data system that all activities use. The SCMC uses an automated system that has real time aggregation of spend/commitment transactions, enterprise spend/commitment trends, and actual savings reporting based upon actual invoices and report generation. Those that do not participate in SCMC use a variety of systems that are less robust and more manual. Again, primarily as manual system is used to calculate savings. Verification/Validation: The SCMC conducts a bi-annual audit of its savings. The savings reporting program and template currently used has been vetted/reviewed by an Office of Inspector General (OIG) audit.						

Program	Departmental Administration						
Performance Goal (Measure)	**Maintain certified acquisition professionals** - Maintain levels of certified acquisition professionals						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	90 %	> 90 %	85 %	85 %	85 %	85 %	85 %
Result	**Met** - 95	**Met** - 93	**Met** - 85	**Met** - 99	**Exceeded** - 96	TBD	TBD
Endpoint Target	Achieve certification levels of at least 90% for acquisition professionals.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	Data Source: The data is provided by two entities – Federal Acquisition Institute's Training Application System (FAITAS) and the Department of Energy's (DOE) Human Resource data provided by DOE's Human Capital Office. FAITAS is the online registration system for federal civilian acquisition workforce training and the system of record for all federal civilian acquisition certification programs. FAITAS is used to maintain certification information and register for courses with the Federal Acquisition Institute (FAI). Result: The percentage is calculated by dividing the number of GS-1102s (contract specialists) holding a Federal Acquisition Certification in Contracting (FAC-C) derived from the FAITAS by the number of GS-1102s (contract specialists) count from DOE's Human Capital Office's official Human Resource's data collection. Limitations: The key limitation is the FAITAS and DOE HR systems are not integrated requiring a "manual" reconciliation of the data. Verification/Validation: As a result of the two data source systems not being integrated, MA-615 takes the time to reconcile the data manually to ensure the data is accurate. Any anomalies are reconciled before reporting. In addition to manual verification of the data, all data queries are submitted specific to job series 1102 and therefore, the data is free of systematic error or bias.						

Program	Departmental Administration						
Performance Goal (Measure)	**Reduce FOIA backlog** - Reduce Freedom of Information Act (FOIA) backlog						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	410 cases	< 10 %	10 %	10 %	10 %	3 %	3 %
Result	**Not Met** - 438	**Met** - 22	**Met** - 17	**Met** - 17.86	**Not Met** - 24	TBD	TBD
Endpoint Target	Continually reduce the FOIA backlog cases by 3% over the prior year backlog						
Commentary on 2017 Results (Action Plan if Not Met)	Backlog increased by 24% from 230 at the end of FY16 to 287 at the end of FY17. The goal was not met due to the significant increase in cases in comparison to previous year case intake. Headquarters received over 300 more requests in FY 2017 than FY 2016. **Action Plan:** The FOIA Office is working towards facilitating the new requests to ensure backlog reduction.						
Documentation, Limitations, Methodology, Validation, and Verification	Data Source: The FOIA cases are tracked in the FOIAXpress database created by AINS Inc., Information Technology company that provides products to over 140 federal agencies. Result: The results are based on the previous year's backlog case number. The goal was to decrease the backlog by 10 percent. This includes all FOIA cases that are received in the next fiscal year. Limitations: The Department receives cases that are complex and that could require searches for records of multiple offices and individuals. The results could be voluminous or very sensitive. Various levels of review and concurrence are also required, some of which include coordination with other agencies. Verification/Validation: Cases are updated on a periodic basis to update status and other information related to the case. We review cases to ensure information is current and correct.						

Program	Departmental Administration						
Performance Goal (Measure)	**Un-assessed DOE Buildings** - Decrease percentage of un-assessed DOE Buildings, OSFs and Trailers with "active" status (excluding FERC, LM, NR and PMAs).						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	5 % reduction of un-assessed buildings	N/A	N/A
Result	N/A	N/A	N/A	N/A	**Exceeded** – 11%	N/A	N/A
Endpoint Target	Decrease of 5% below the prior year's baseline each year.						
Commentary on 2017 Results (Action Plan if Not Met)	The FY 2016 baseline for this performance metric was 12%. A 5% reduction of unassessed assets was planned for FY 2017. The final FY 2017 Not Assessed assets was 1%, a reduction of 11% from FY 2016. Target was Exceeded.						
Comment	The metric was calculated based on replacement plant value due to the various types of real property. In FY 2016, unassessed assets had been at 12%. For FY 2017, unassessed assets are at 1%, a reduction of 11%.						
Documentation, Limitations, Methodology, Validation, and Verification	Data Source: The Data is provided by the Department's Real Property Database – the Facilities Information Management System (FIMS) via fiscal, year-end Snapshot. Result/Methodology: The metric was calculated based on replacement plant value due to the various types of real property – Criteria: all DOE owned and active buildings, OSFs and Trailers excluding assets owned by FERC, LM, NR, and the PMAs. Limitations: No known significant concerns, however there will be a lag time between data gathered and data entered. Sites are allowed to update FIMS throughout the year. However, year-end data is used when officially providing information for external use. This becomes available mid-January following the end of the fiscal year. This allows for consistent, repeatable reporting and provides the most complete information for a given fiscal year. Verification/Validation: The data for this element is qualitative not quantitative. The Program offices and their sites perform reviews of the information in FIMS annually or more frequently as needed.						

Program	Departmental Administration						
Performance Goal (Measure)	**Functional Assessments** - Maintain a level of assessment for DOE owned and "active" Buildings, Trailers and Structures (excluding FERC, LM, NR and PMAs) based on replacement plant value and an assessment having occurred within five fiscal years.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	90 %	90 %
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	Maintain 90%						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	A real property asset is to have a functional assessment every five years. The calculation will be based on replacement plant value (RPV) due to the mixed category of real property assets. Calculation: RPV of Assessed / RPV of All.						
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Departmental Administration						
Performance Goal (Measure)	**Energy and Water Sustainability Performance** - In accordance with statutory and executive order requirements DOE will perform a sufficient number of building evaluations, such that, in a four-year period, at least 90% of owned buildings and/or square footage will be assessed for energy & water efficiency opportunities and incorporation of sustainability principles as required.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	90 %	90 %
Result	N/A	N/A	N/A	N/A	N/A	TBD	TBD
Endpoint Target	Maintain 90%						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Office of Project Management

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	90 %	90 %	90 %	90 %	90 %	90 %
Result	N/A	**Not Met** - 76	**Not Met** - 78	**Met** - 91	**Not Met** - 88	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 2017 Results (Action Plan if Not Met)	The Department achieved an 88% project management success rate, just shy of the target. **Action Plan:** The action plan is to review the metrics, and their basis, with the Project Management Support Offices in the major programs (EM, NA, and SC) and the Project Management Risk Committee (PMRC) to address the findings and make recommendations to improve future performance. Also, apply recent project management reforms to the Department's legacy projects.						
Documentation, Limitations, Methodology, Validation, and Verification	Managed by the Project Controls Division within the Office of Project Management. Documentation: Maintained in the Department's central repository for key departmental-level project information called the Project Assessment and Reporting System (PARS). Limitations: Data is not available until 45 days after the end of each quarter throughout the FY. Methodology: The analyst will query PARS 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, project completion, 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.						

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 from 174 days in FY 09 to 100 days or less by end of FY 2011, and further to an annual average of 80 days.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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** - 101	**Met** - 80	**Not Met** - 98.7	**Not Met** - 106.5	**Not Met** - 119.3	TBD	TBD
Endpoint Target	Maintain a DOE average annual time-to-hire of 80 days or less for all GS and GS-equivalent positions.						
Commentary on 2017 Results (Action Plan if Not Met)	For FY2017, DOE had a total of 929 new hires with an average T2H of 119.3 days. Due to the hiring freeze and implemented managed hiring process to lift the hiring freeze, average T2H each quarter and at the end of year has fluctuated upward from previous years. **Action Plan:** Continue monitoring and implement refined efficiencies to reduce T2H. The managed hiring process will increase the overall T2H because of the additional requirements and checks and balances. Additionally, as the service center model is fully implemented and refined, T2H averages should begin to decrease.						
Documentation, Limitations, Methodology, Validation, and Verification	Data Source: Hiring information in HR Workflow as depicted in the T2H dashboard in iManage. Data is collected at discrete intervals and the total time to hire for an individual is the actual number of days from Recruit Initiation to Entrance On Duty (EOD). The Time-To-Hire phases are as follows: Recruit Initiation, Job Classification/Recertification, Announcement Preparation, Vacancy Announcement, Application Evaluation, Candidate Selection, Job Offer, Job Acceptance, and Entrance on Duty. The DOE average T2H is a mathematical average that is calculated within the T2H dashboard. Limitations: Data source in some instances may be delayed, in which case is updated before the end of the year. Verification and Validation: Data is collected via the HR Workflow system. The system is audited frequently. Personnel processing personnel actions are trained and qualified on the system.						

Program	Departmental Administration						
Performance Goal (Measure)	**Implement a framework for performance-based culture** - Percent of SES with compliant plans.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	100 %	100 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	N/A
Result	**Met** - 100	**Not Met**	**Met** - 95	**Met** - 92.1	**Met** - 92	TBD	N/A
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 2017 Results (Action Plan if Not Met)	As of the end of the year, 371 of 402 SES personnel have performance plans that as of the close of the year are compliant with DOE performance policy.						
Comment	An SES performance plan is compliant with DOE performance management policy if it is in place within 30-45 days of assignment, includes a mid-year progress review, and a final review completed within 30-days following the close of the fiscal year with a final rating issued by the end of the calendar year that the specific performance cycle closed.						
Documentation, Limitations, Methodology, Validation, and Verification	Data Source: The source of requirements for SES performance management is the SES Performance Management Policy. The data source for determining reporting information is the ePerformance system, specifically a special report run by the ePerformance system program manager. Limitations: There are no known limitations. The ePerformance information system is a real time management and reporting system. The percentage in compliance is manually derived by determining the number of affected SES performance plans, identifying the compliant step that those plans must be in that aligns with the reporting period, determining the number of plans that are in the compliant step of the process, and adjusting for the other variables (such as an employee not in a position for more than 30-45 days) that would exclude plans from being included. The final result is a ratio expressed as a percentage of counted plans. Validation and Verification: The data is collected via the ePerformance system which is an audited information management system that tracks performance plans through the performance cycle. The reported value is manually calculated each reporting period (quarterly and end of reporting year).						

Program	Departmental Administration						
Performance Goal (Measure)	**Retention of a high performing workforce** - Increase the retention of a high performing workforce						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	< 38 % of all attrition is made up of High Performing Employees
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	High performing employees (employees rated Exceeds or Significantly Exceeds) comprise 36% or less of all annual attritions by FY2020.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Baseline: High performing employees, employees rated Exceeds or Significantly Exceeds (or equivalent)) account for 39.4% of all Departmental attrition, based on attrition data from FY14 – FY17.						
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	3 cases	4 cases	4 cases	3 cases	3 cases	3 cases	3 cases
Result	**Met** - 3	**Met** - 3	**Met** - 3	**Met** - 0	**Met** - 0	TBD	TBD
Endpoint Target	Continuously assure that there are no more than 3 security cases more than 120 days old at any time.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification	New case data and final closing of the case (by issuance of a Decision or a Dismissal) is submitted to OHA's Docket section. OHA Docket section then enters the case date information (when case is opened and when the case is closed) into OHA's Legal Files case management software. Legal Files allows management to run reports which provide data on the age of all cases before OHA. The Legal Files software calculates the age of each case using the date when the case is opened and the date when the case is closed by the issuance of a Decision or Dismissal. Verification of entry data is performed by management accessing pdf copies of case documents stored in Legal Files.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries	≥ 100,000 Batteries	N/A	N/A
Result	**Met** - 100,000	**Met** - 100,000	**Met** - 100,000	**Met** - 100,000	**Met** - 100,000	N/A	N/A
Endpoint Target	Assist in the development of advanced battery manufacturing capacity to support electric vehicles.						
Commentary on 2017 Results (Action Plan if Not Met)	In FY17, borrowers that have received Direct Loans to produce lithium-ion Electric Vehicle batteries achieved the targeted capacity to support 100,000 electric vehicles.						
Comment	This goal is ending in FY 2017. The borrower has repaid the direct loan used to increase the production capacity of lithium-ion EV batteries. As a result, the program will no longer monitor the performance outputs for battery production capacity.						
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on monthly and quarterly reports from borrowers on the manufacturing production capacity of lithium-ion Electric Vehicle batteries. For each project, LPO Engineers within its Technical Project Management Division and Independent Engineers test the manufacturing production capacity of lithium-ion Electric Vehicle batteries at the time of construction completion. From there LPO Engineers analyze monthly and quarterly reports from borrowers on their manufacturing production capacity of lithium-ion Electric Vehicle batteries to monitor and validate performance and reporting. Additional monitoring and validation is completed during periodic on-site visits performed by LPO Engineers. Reports and on-site visits allow LPO Engineers the ability to recognize performance and reporting deviations since the initial test performed at the time of construction completion. There is no limitation on the impact of assessing the performance results.						

Program	Loan Program Office						
Performance Goal (Measure)	**ATVM Reduction in Petroleum Usage** - Reduction in petroleum usage 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 200 Million Gallons	250 Million Gallons	290 Million Gallons	290 Million Gallons	290 Million Gallons	270 Million Gallons	N/A
Result	**Met** - 280	**Met** - 306	**Met** - 335.3	**Not Met** - 270	**Not Met** - 285	TBD	N/A
Endpoint Target	Annually assist in the reduction in petroleum usage 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.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	The President's FY 2019 Budget eliminates the origination of any new loans under the ATVM Loan Program. Resultantly, the program will only monitor and report outputs for the reduction in petroleum usage from current borrowers.						
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on annual reports from borrowers on the reduction of petroleum usage. Borrowers calculate the annual reduction of petroleum usage based on the number of fuel economy vehicles produced and average petroleum usage saved as compared to business as usual during the based year. From there LPO Engineers analyze the annual reports from borrowers on the reduction of petroleum usage to monitor and validate performance and reporting. Additional monitoring and validation is completed during periodic on-site visits performed by LPO Engineers. Reports and on-site visits allow LPO Engineers the ability to recognize performance and reporting anomalies. Borrowers will not know the actual reduction in petroleum usage until one year after fuel efficient automobiles are on the road.						

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.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 5,000,000 mt	≥ 5,000,000 mt	≥ 16,400,000 mt	≥ 21,200,000 mt	≥ 21,200,000 mt	≥ 21,200,000 mt	≥ 21,200,000 mt
Result	**Not Met** - 3,150,000	**Met** - 8,300,000	**Not Met** - 13,100,000	**Not Met** - 18,300,000	**Met** - 22,500,000	TBD	TBD
Endpoint Target	On an ongoing basis, projects receiving loan guarantees that have achieved commercial operations will have lower estimated annual CO2 emissions reductions compared to "business as usual energy generation.						
Commentary on 2017 Results (Action Plan if Not Met)	In FY17, borrowers that have received loan guarantees to increase the avoidance of CO2 emissions achieved the target of avoiding greater than or equal to 21,200,000 mt of CO2 emissions						
Comment	The President's FY 2019 Budget eliminates the origination of any new loans under the Title XVII Innovative Technology Loan Guarantee Program.						
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on quarterly reports from borrowers on the electricity generation derived from their projects. From there LPO multiplies the reported electricity generation by the CO2 avoidance conversation factor. The CO2 avoidance conversation factor is the EIA estimate of annual CO2 emissions from energy consumption at conventional power plants and combined heat and power plants divided by EIA estimate of annual US electric power industry generation. To validate the performance and performance reporting of electricity generation LPO Engineers within its Technical Project Management Division test the electricity generation derived from borrowers' projects during annual on-site visits. There is no limitation on the impact of assessing the performance results. However, it is worth noting that the reported electricity generation from borrowers are real time whereas, the data used to calculate the CO2 avoidance conversation factor are actuals from the prior year because at the time of reporting only estimates are available for the current year.						

Program	Loan Program Office						
Performance Goal (Measure)	**Generation Capacity of Projects Receiving Loan Guarantees** - Increase annual generation capacity from projects receiving DOE loan guarantees that have achieved commercial operations. (Gigawatts, GW)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 2.8 GW	≥ 3.8 GW	≥ 4 GW	≥ 4 GW	≥ 4 GW	≥ 4 GW	≥ 4 GW
Result	**Not Met** - 1.9	**Not Met** - 3.2	**Not Met** - 3.82	**Met** - 4	**Met** - 4	TBD	TBD
Endpoint Target	Continue to meet annual target until the loans are repaid.						
Commentary on 2017 Results (Action Plan if Not Met)	In FY17, borrowers that have received loan guarantees to produce annual electricity generation capacity achieved the target of producing greater than or equal to 4 GW electricity generation capacity						
Comment	The President's FY 2019 Budget eliminates the origination of any new loans under the Title XVII Innovative Technology Loan Guarantee Program.						
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on monthly reports from borrowers on the electricity generation capacity from their projects. LPO Engineers within its Technical Project Management Division and Independent Engineers contracted by LPO test the electricity generation capacity performance of each project at the time of construction completion. From there LPO Engineers analyze monthly reports from borrowers on the electricity generation capacity from their projects to monitor and validate the electricity generation capacity performance and reporting. Monthly reports allow LPO Engineers the ability to recognize performance and reporting deviations since the initial test performed at the time of construction completion. There is no limitation on the impact of assessing the performance results.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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** - 98	**Met** - 97	**Met** - 97	**Met** - 98	**Met** - 98.3	TBD	TBD
Endpoint Target	Achieve 90% satisfactory rating on customer satisfaction surveys annually.						
Commentary on 2017 Results (Action Plan if Not Met)	The survey satisfaction results demonstrate AU's and the Department's commitment to its employees and former employees regarding the implementation of the medical screening program.						
Documentation, Limitations, Methodology, Validation, and Verification	The Former Worker Program cooperative agreement holders maintain a file of all completed surveys. The aggregated results of the customer surveys are forwarded to EHSS and are maintained in a results table. The rate of satisfaction is based on a satisfactory or higher rating on at least 90% of the completed 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	= 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	≥ 90 % of customer satisfaction rating
Result	**Met** - 92	**Met** - 95	**Met** - 90	**Met** - 93	**Met** - 91	TBD	TBD
Endpoint Target	This is an ongoing annual performance measure, as information quality is central to EIA's mission.						
Commentary on 2017 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 Division 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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** - 96	**Met** - 96	**Met** - 95	**Met** - 97	**Met** - 96	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 2017 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 policy making and public understanding of energy and its interactions with the economy and the environment.						
Documentation, Limitations, Methodology, Validation, and Verification	Internal tracking; for a core set of recurring data and analytical products, EIA develops a release schedule and tracks the actual 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 Operating Cost** - Annual Operating Cost Performance: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for 100+ customers.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	≤ 0.068/$ KWh
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, SEPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.						
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Southeastern Power Administration						
Performance Goal (Measure)	**SEPA Repayment of Federal Power Investment** - 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 100 percent	≥ 100 percent	≤ 2.148 AUI	≤ 2,143 million dollars AUI	≤ 2,212 million dollars AUI	<=2,138 million dollars AUI	≤ 2,135 million dollars AUI
Result	**Not Met**	**Met** - 100	**Met** - 1.686	**Met** - 1,626	**Met** - 1,586	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 2017 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** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	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	≥ 100 CPS1 rating
Result	**Met** - 220.42	**Met** - 193.2	**Met** - 187.7	**Met** - 200.51	**Met** - 266.3	TBD	TBD
Endpoint Target	Ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	CPS1 measures generation/load balance on one-minute intervals.						
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 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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	< 0.063 $/kWh	< 0.063 $/kWh	< 0.063 $/kWh	< 0.063 $/kWh	< 0.065 $/kWh	N/A	N/A
Result	**Met** - 0.0158	**Met** - 0.0182	**Met** - 0.0176	**Met** - 0.0163	**Met** - 0.017	N/A	N/A
Endpoint Target	Southwestern will continue to control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Prior information that was available is no longer supplied by utilities. As a result, this measure has been replaced by a new operating cost measure.						
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by Division of Resources and Rates, calculated in house for quarterly report. National target is provided from a published APPA report. Southwestern uses this average as a benchmark. Southwestern calculates cost per kilowatt average based upon monthly production reports which tracks hydropower generation expenses and total transmission and Oracle financial management systems. The information is extrapolated to come up with a cost per kilowatt hour.						

Program	Southwestern Power Administration						
Performance Goal (Measure)	**SWPA - Operating Cost** - Annual Operating Cost Performance: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for 100+ customers.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	≤ 0.068 $/KWh
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, SWPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.						
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≤ 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	≤ 1,789 million in AUI
Result	**Met** - 440	**Met** - 442	**Met** - 466	**Met** - 504	**Met** - 551	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 2017 Results (Action Plan if Not Met)	FY 2017 results provided are an estimate based on the PRSs. Results will be updated and finalized at the completion of the financial audit of the Southwestern Federal Power System (SWFPS) combined financial statements.						
Documentation, Limitations, Methodology, Validation, and Verification	Values for Target (allowable unpaid investment) and Result (estimated/actual unpaid investment) provided annually by the Division of Resources and Rates from the most recent Power Repayment Studies (PRSs) for each of our three rate systems. • Target - The AUI is the sum of the Allowable Balance in each rate system PRS for the indicated FY. The PRS Allowable Balance is the sum total of all annual investments allowed to remain unpaid as of the end of the FY; each investment's allowable unpaid period is based on when it is placed in operation and the applicable repayment period (up to 50 years). • Result - The UI is the sum of the Balance to Be Repaid for each rate system PRS for the indicated FY. The PRS Balance to Be Repaid is the sum total of all remaining investment to be repaid as of the end of the FY. • Actual investment data is obtained from Southwestern's financial statements and the U.S. Army Corps of Engineers' (Corps) financial statements, through the SWFPS combined financial statement audit process. • The estimated future investment data for Southwestern investments is obtained from Southwestern's budget and capital replacements plans; The estimated future investment data for the Corps is obtained from the Corps' 5-year capital projects plans and master list of major equipment replacements. These estimates are provided to Southwestern's Division of Resources and Rates as part of the annual PRS process. • Finalized actual investment data is available only after the SWFPS combined financial statement audit process is complete. • Estimated future investment data is dependent upon the accuracy of estimates provided by the various Southwestern and Corps sources. • Verification and validation occurs throughout the FY financial audit of the SWFPS combined financial statements, as the financial data provided by the various Southwestern and Corps sources during the annual PRS process is cross-checked with financial statements.						

Program	Southwestern Power Administration						
Performance Goal (Measure)	**SWPA System Reliability Performance - NERC** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	> 100 CPS1 rating and CPS2>90	>100 CPS1 rating and CPS2>90	CPS1>100 and CPS2>90	CPS1>100 and CPS2>90	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating
Result	**Met** - 186.74	**Met** - 187.97	**Met** - 214.3	**Met** - 220.25	**Met** - 195.44	TBD	TBD
Endpoint Target	Ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	CPS1 measures generation/load balance on one-minute intervals.						
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by the Division of Scheduling and Operations for quarterly updates. CPS1 measures generation/load balances at one minute intervals. This information is tracked through Southwestern's Supervisory Control and Data Acquisition System (SCADA). It is a 10 minute clock on a rolling 12 month average. A balancing authority's (BA) ability to balance supply and demand is measured by its area control error (ACE), a real-time value that is continuously tracked in each BA's SCADA system. The 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. Documentation: NERC Control Performance Report submitted by each SWPA Balancing Authority.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	≤ 3 accountable outages	N/A
Result	**Met** - 1	**Met** - 0	**Met** - 3	**Met** - 2	**Met** - 3	TBD	N/A
Endpoint Target	Southwestern provides reliable service to customers each year, thereby maintaining power system reliability.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	SWPA will be measuring this number of outages internally starting in FY 2019. As such, no target has been established for FY 2019.						
Documentation, Limitations, Methodology, Validation, and Verification	Data has been provided by Southwestern's Deputy Administrator Office of Power Delivery. The outages are tracked manually via an elog recorded and provided by Southwestern's dispatchers. All outages are reviewed by the Senior Management to determine cause analysis to correct future issues. The unavoidable outages analysis may lead to additional training requirements and it is passed along to pertinent parities.						

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≤ 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	≤ 8.078 billion dollars AUI
Result	**Met** - 6.204	**Met** - 5.476	**Met** - 5.214	**Met** - 5.318	**Met** - 5.263	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 2017 Results (Action Plan if Not Met)	Met (Green): Collective repayment for Western projects through the 4th quarter of FY 2017 indicate UI is on target to be equal or less than 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. There is typically a lag in the final statistics becoming available for performance reporting and as such, these results are considered preliminary until then. The 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** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	>100 CPS1 rating with CPS2>90	> 100 CPS1 rating with CPS2>90	CPS1>100; CPS2>90	> 100 CPS1 rating with CPS2>90	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating
Result	**Met** - 152.91	**Met** - 171.78	**Met** - 162.18	**Met** - 142.52	**Met** - 154.44	TBD	TBD
Endpoint Target	Ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.						
Commentary on 2017 Results (Action Plan if Not Met)	Met (green): WAPA's control area achieved a "Pass" rating for CPS1 FY 2017 with an annual average CPS1 of 154.44.						
Comment	CPS1 measures generation/load balance on one-minute intervals.						
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. Documentation: NERC Control Performance Report submitted by each WAPA Balancing Authority.						

Program	Western Area Power Administration						
Performance Goal (Measure)	**WAPA Operating Cost** - Annual Operating Cost Performance: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for 100+ customers.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	≤ 0.068 $/KWh
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.						
Commentary on 2017 Results (Action Plan if Not Met)							
Comment	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, WAPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.						
Documentation, Limitations, Methodology, Validation, and Verification							

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	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent	≥ 97.5 percent
Result	**Met** - 102.3	**Met** - 100.7	**Met** - 100.6	**Met** - 102.1	**Met** - 99.9	TBD	TBD
Endpoint Target	Maintain at least 97.5% Heavy-Load-Hour Availability						
Commentary on 2017 Results (Action Plan if Not Met)	Target Met. Bonneville and its FCRPS partners met this operational goal for the hydropower system with a result of 99.9% (official) through the end of the fiscal year.						
Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo, from BPA Chief Operating Officer to BPA Administrator, based on confirmation of results each quarter by assigned agency managers and subject matter experts. Considerable effort is made to align generation availability with water supply and market demand and the HLHA measure is designed to improve that alignment. HLHA is the ratio of two metrics reported as a percentage and as a 12-month rolling average. The numerator is actual generation availability in megawatts during heavy load hours (0700 - 2200, Monday through Saturday). The denominator is planned generation availability in megawatts over the same time period. “Target Met” if ≥ 97.5% or “Target Not Met” if < 97.5%. The data source for actual generation availability is the real-time module of BPA’s Outage Database which is populated with data received directly from the generating projects. The data source for planned generation availability is the planning module of the Outage Database.						

Program	Bonneville Power Administration						
Performance Goal (Measure)	**BPA Repayment of Federal Power Investment to Keep Costs Low** - Meet planned annual repayment of principal on Federal power investments to help keep costs low consistent with sound business principles.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
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 2017 Results (Action Plan if Not Met)	Target Met. BPA made a total annual payment of $1.3 billion of which $909 million was principal amortization. BPA met this performance target for the 34th straight year, demonstrating Bonneville's ongoing commitment to meeting its obligations to U.S. taxpayers and to keeping costs low consistent with sound business principles.						
Comment	As a capital-intensive business, with constant requirements to maintain extensive generation and transmission system assets across the region, meeting BPA's planned federal annual repayment is vital to maintaining a high credit rating which enables access to lower cost non-federal capital to make needed system investments.						
Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo from BPA Chief Operating Officer to BPA Administrator based on confirmations each quarter by assigned managers and subject matter experts. For quarters one through three BPA reports a forecast of the portion of its planned year-end repayment. In quarter four, BPA notes any advance principal repayment and reports the actual portion of planned repayment that is made as follows: "Target Met" if ≥ 100% or "Target Not Met" if < 100%. Quarterly financial review reports with year-end cash estimates are the basis of quarterly results. Transactional records from U.S. Treasury systems during the year and a transactional report submitted from BPA to U.S. Treasury in September confirm actual annual results. BPA's operational and financial forecasts may change over the year due to changing market conditions, hydro operations, other changing economic conditions, and the evolving competitive electric utility industry in the Pacific Northwest.						

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) of greater than or equal to 100 percent.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent
Result	**Met** - 116.09	**Met** - 130.39	**Met** - 139.91	**Met** - 143.8	**Met** - 151.3	TBD	TBD
Endpoint Target	Continually ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.						
Commentary on 2017 Results (Action Plan if Not Met)	Target Met. BPA achieved the CPS1 standard with a result of 151.3% against a target of no less than 100%. Meeting this target demonstrates BPA's ongoing commitment and ability to provide reliable transmission for the region.						
Comment	CPS1 measures generation/load balance on one-minute intervals.						
Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo from BPA Chief Operating Officer to BPA Administrator based on confirmation of results each quarter by assigned managers and subject matter experts. CPS1 is calculated monthly as a rolling 12-month average at the end of each quarter and reported as follows: "Target Met" if CPS1 ≥ 100% or "Target Not Met" if CPS1 < 100%. Results for CPS1 are calculated in the Automated Generation Control system, verified by Transmission Services and reported to NERC quarterly.						

Indian Energy Policy and Programs

Indian Energy

Program	Indian Energy						
Performance Goal (Measure)	**Generation Capacity** - Increase total installed generation capacity from projects receiving Indian energy deployment grants (cumulative beginning in FY 2019, Megawatts, MW)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	4.4 MW
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Installation of 100 MW cumulative of new generation capacity in Indian Country by 2030.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Program	Indian Energy						
Performance Goal (Measure)	**Savings** - Increase energy cost savings to tribal communities co-funded by the Office of Indian Energy over the life of the installed generation system or efficiency measures (cumulative beginning in FY 2019, $M)						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	100 million dollars
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Cumulative energy cost savings to funded tribal communities over the life of the installed generation systems of more than $2 billion dollars by 2030.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Office of Technology Transitions

Office of Technology Transitions

Program	Office of Technology Transitions						
Performance Goal (Measure)	**Lab Partnering Service** - Increase identifiable, available experts in the Lab Partnering Service to enable technology transfer to and commercialization by the private sector of DOE Lab technologies and capabilities.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	N/A	N/A	150 experts
Result	N/A	N/A	N/A	N/A	N/A	N/A	TBD
Endpoint Target	Increasing identified, available experts is one aspect of enabling technology transfer and commercialization. On an ongoing basis, meet annual targets for increasing publicly-available information on lab capabilities and technologies to make these more readily accessible to industry and other third parties for commercialization.						
Commentary on 2017 Results (Action Plan if Not Met)							
Documentation, Limitations, Methodology, Validation, and Verification							

Office of Small and Disadvantaged Business Utilization

Office of Small and Disadvantaged Business Utilization

Program	Office of Small and Disadvantaged Business Utilization						
Performance Goal (Measure)	**Prime contracting awards** - Advocate for small business set-asides and track the agency prime contracting awards to small businesses with the goal of ensuring DOE meets or exceed the Small Business Administration's (SBA) determined percentage of DOE projected Federal Spend for primes.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	10.2 %	10.2 %	TBD
Result	N/A	N/A	N/A	N/A	**Met** - 12.02	TBD	TBD
Endpoint Target	Meet or exceed SBA's determined percentage of DOE projected Federal spend for prime SB contracts (inclusive of first-tier M&O subcontracts).						
Commentary on 2017 Results (Action Plan if Not Met)	OSDBU tracks the DOE small business goal achievement through two data sources approved by the Small Business Administration.						
Comment	DOE OSDBU does not unilaterally set the agency's goals; DOE goals are determined by DOE OSDBU collaborating with its internal program elements and externally with the Small Business Administration. SB-utilization goals for a given fiscal year are typically available by the end of November of that fiscal year. SB-utilization results for a given fiscal year are expected to be shared with DOE by the Small Business Administration in the March timeframe of the following fiscal year.						
Documentation, Limitations, Methodology, Validation, and Verification	The two data systems are The Federal Procurement Data System (FPDS) and the Management and Operations Subcontracting Reporting Contract (MOSRC). FPDS is a national system used by all Federal agencies and MOSCR is a data system used only by DOE due to the unique business model of the Management and Operations contractors. Legislation was passed to allow DOE to collect this data through MOSRC.						

Program	Office of Small and Disadvantaged Business Utilization						
Performance Goal (Measure)	**Subcontracting awards** - Advocate for small business subcontracting and track the subcontracting awards with the goal of ensuring DOE meets or exceeds the Small Business Administration's (SBA) determined percentage of DOE projected Federal Spend for subcontracting.						
Fiscal Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Target	N/A	N/A	N/A	N/A	40 %	42 %	TBD
Result	N/A	N/A	N/A	N/A	**Met** - 43.3	TBD	TBD
Endpoint Target	Meet or exceed SBA's determined percentage of DOE projected Federal spend for prime SB subcontracts (not including first-tier M&O subcontracts).						
Commentary on 2017 Results (Action Plan if Not Met)	OSDBU tracks the DOE small business goal achievement through one data source approved by the Small Business Administration.						
Comment	DOE OSDBU does not unilaterally set the agency's goals; DOE goals are determined by DOE OSDBU collaborating with its internal program elements and externally with the Small Business Administration. SB-utilization goals for a given fiscal year are typically available by the end of November of that fiscal year. SB-utilization results for a given fiscal year are expected to be shared with DOE by the Small Business Administration in the March timeframe of the following fiscal year.						
Documentation, Limitations, Methodology, Validation, and Verification	The data systems is called the Electronic Subcontracting Reporting System (ESRS). ESRS is a national system used by all Federal agencies.						

Fiscal Year 2016 Unmet Performance Targets

The following table displays performance measures where the FY 2016 target was not met, the FY 2017 status, and whether the measure was discontinued.

Program	FY 2016 Performance Goal	FY 2017 Performance Status
NNSA Weapons Activities / Infrastructure and Operations	**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. FY 2016 Target: 90% of projects, Result: 60%	**Not Met** FY 2017 Target: 90% Result: 89%
	Maintenance – Percentage of preventative maintenance (PM) spending vs total maintenance (TM) FY 2016 Target: 40% PM conducted, Result: 34%	**Met** FY 2017 Target: 35% Result: 35%
	Recapitalization – Percentage of NNSA assets rated as adequate (by Replacement Plant Value) FY 2016 Target: 39% of assets, Result: 37%	**Not Met** FY 2016 Target: 37% of assets Result: 35%
NNSA Weapons Activities / NNSA IT and Cybersecurity	**Cybersecurity Assessment Reviews –** Annual Percentage of cybersecurity Site Assessment Reviews conducted by the Office of Enterprise Assessments or the NA-IM Assessment Team that resulted in the rating of "effective." FY 2016 Target: 100% of reviews resulting in "effective" rating , Result: 50%	**Met** FY 2017 Target: 100% Result: 100%

Program	FY 2016 Performance Goal	FY 2017 Performance Status
NNSA Weapons Activities / Nuclear Counterterrorism and Incident Response Program	**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. FY 2016 Target: 91 EORI, Result: 89	**Not Met** Measure was replaced with the new Incident Response Readiness Index (IRRI) measure. FY 2017 Target: 91 IRRI Index Result: 89
NNSA Defense Nuclear Nonproliferation / Global Material Security	**Sustainability –** Cumulative number of radiation detection systems that are being indigenously sustained. FY 2016 Target: 558 cumulative radiation detection systems, Result: 538	**Exceeded** FY 2017 Target: 620 cumulative radiation detection systems Result: 630
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 2016 Target: 100kg Result: 7.62	**Measure Discontinued**
	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. FY 2016 Target: 98 Facilities, Result: 97	**Not Met** FY 2017 Target: 101 Result: 100
EERE Weatherization & Intergovernmental Programs (OWIP)	**OWIP – Retrofits –** Weatherize homes of low income families FY 2016 Target: 33,600 Homes Weatherized, Result: 31,370	**Exceeded** FY 2017 Target: 33,000 Result: 37,512
Fossil Energy (FE)	**CCS Demonstrations - I**nitiate operation of CCS demonstration projects - Initiating operation of CCS demonstration projects will help to establish that carbon capture,	**Not Met** FY 2017 Target: 4

Program	FY 2016 Performance Goal	FY 2017 Performance Status
FE Research and Development	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. FY 2016 Target: 3 CCS projects initiated operation, Result: 1	Result: 3
Fossil Energy (FE) Petroleum Reserves	**Sustained (90 day) Drawdown Rate** - Maintain the capability to drawdown the SPR at the design drawdown rate of 4.415 million barrels per day. FY 2016 Target: 4.22 MMB/Day drawdown readiness rate, Result: 4.1	**Not Met** FY 2017 Target: 4.2 Result: 4.17
Environmental Management Nuclear Materials and Tank Waste	**Depleted and Other Uranium (DU&U) Packaged for Disposition -** Increase the cumulative amount of DU&U packaged in a form suitable for disposition FY 2016 Target: 97,256 metric tons, Result: 80,221	**Not Met** FY 2017 Target: 88,721 Result: 88,306
	High Level Waste Packaged for Disposition – Increase the cumulative total of high level waste canisters packaged for disposition. FY 2016 Target: Cumulative total of 4,393 canisters packaged, Result: 4,374 canisters	**Met** FY 2017 Target: 4,426 Result: 4,426
	Liquid Waste Eliminated – Increase the cumulative volume of radioactive liquid waste (including other forms such as sludge) eliminated from inventory. FY 2016 Target: Cumulative total of 7,426 thousand gallons eliminated, Result: 7,342	**Not Met** FY 2017 Target: 7,684 Result: 7,414
	Material Access Areas Eliminated – Increase the cumulative number of Material Access Areas, (i.e., a high security location which contains special nuclear material) closed. FY 2016 Target: 34 Material Access Areas Eliminated, Result: 30	**Measure Discontinued**

Program	FY 2016 Performance Goal	FY 2017 Performance Status
Environmental Management Waste Management	**Legacy and Newly Generated LLW and Mixed LLW Disposed** – Increase the cumulative amount of legacy and newly generated low-level and mixed low-level waste disposed. FY 2016 Target: 13,37,349 cubic meters, Result: 1,330,550	**Exceeded** FY 2017 Target: 1,340,981 Result: 1,343,369
Environmental Management Site Restoration	**Nuclear Facilities Completed facilities) –** Increase the cumulative number of nuclear facilities completed. FY 2016 Target: Cumulative total of 160 nuclear facilities completed, Result: 151	**Not Met** FY 2017 Target: 157 Result: 152
	Radioactive Facilities Completed – Increase the cumulative number of radioactive facilities completed. FY 2016 Target: 581 facilities, Result: 567	**Not Met** FY 2017 Target: 577 Result: 571
	Remediation Completed - Increase the cumulative number of release sites remediated. FY 2016 Target: 8,340 release sites, Result: 8,159	**Exceeded** FY 2017 Target: 8,205 Result: 8,258
Chief Information Officer	**Detect – Anti-Phishing -** Performance of Anti-Phishing measurements must be greater than or equal to 90% on at least 5 of 7 capabilities. FY 2016 Target: ≥ 5 capabilities greater than 90%, Result: 2	**Met** FY 2017 Target: ≥ 5capabilities greater than 90% Result: 6
	Identify – Hardware Asset Management - Achieve performance of 95% or greater for both Hardware Asset Management metrics (asset detection and asset meta data collection) FY 2016 Target: ≥ 95%, Result: 60%	**Not Met** FY 2017 Target: ≥ 95% Result: 85%
	Protect - MFA - Privileged Network Account performance - Privileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 100%.	**Not Met** FY 2017 Target: 100%

Program	FY 2016 Performance Goal	FY 2017 Performance Status
	FY 2016 Target: 100%, Result: 82%	Result: 96%
	Protect - MFA - Unprivileged Network Account performance - Unprivileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 85%. FY 2016 Target: 85% Result: 52%	**Not Met** FY 2017 Target: 85% Result: 66%
	Detect – Malware Defense - Performance of malware defense measurements must be greater than or equal to 90% on at least 3 of 5 capabilities. FY 2016 Target: ≥ 3 capabilities greater than 90%, Result: 0	**Met** FY 2017 Target: ≥ 3 Result: 3
	Detect - Other Defenses - Performance of "Other Defenses" measurements to include specific Anti-Phishing and Malware capabilities must be greater than or equal to 90% on at least 2 of 4 capabilities. FY 2016 Target: ≥ 2 capabilities greater than 90%, Result: 1	**Met** FY 2017 Target: ≥ 2 Result: 2
	Protect – Secure Configuration Management – Achieve performance of greater than or equal to 95% for Secure Configuration Management FY 2016 Target: ≥ 95%, Result: 77%	**Met** FY 2017 Target: 95% Result: 99%
	Identify – Software Asset Management – Achieve performance of greater than or equal to 95% for both Software Asset Management metrics (software inventory and software white-listing) FY 2016 Target: ≥ 95%, Result: 44%	**Not Met** FY 2017 Target: ≥ 95% Result: 91%

Program	FY 2016 Performance Goal	FY 2017 Performance Status
	Protect - Vulnerability Management - Achieve performance greater than or equal to 95% for the detection of hardware and software vulnerability and weakness management FY 2016 Target: ≥ 95% , Result: 64%	**Met** FY 2017 Target: ≥ 95% Result: 99%
	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. FY 2016 Target: 71%, Result: 61%	**Measure Discontinued**
	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 2016 Target: 93% , Result: 47%	**Measure Discontinued**
Human Capital Management	**Annual reductions in the average time-to-hire –** Annual reductions in the average time-to-hire from 174 days in FY 09 to 100 days or less by end of FY 2011, and further to an annual average of 80 days. FY 2016 Target: ≤ 80 days, Result: 106.5	**Not Met** FY 2017 Target: 80 days Result: 119.3
Loan Program Office	**ATVM Reduction in Petroleum Usage** – Reduction in petroleum usage 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. FY 2016 Target: 290 Million Gallons, Result: 270	**Not Met** FY 2017 Target: 290 Million Gallons Result: 285 Million Gallons
	CO2 Reductions Loans Guarantee – Estimated annual CO2 emissions reductions of projects receiving loan guarantees that have achieved commercial operations.	**Met** FY 2017 Target: ≥ 21,200,000 mt

Program	FY 2016 Performance Goal	FY 2017 Performance Status
	FY 2016 Target: ≥ 21,200,000 mt of CO2 avoided, Result: 18,300,000	Result: 22,500,000

Performance Goals Discontinued as of Fiscal Year 2017

The following table displays the performance measures which were discontinued following the close of FY 2016 and the reason for their discontinuation.

Program	Performance Goal Discontinued as of FY 2017	Rationale
NNSA / Weapons Activities	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. FY16 Target: 84% of progress, Result: 84%	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 Life Extension Programs.
NNSA / Defense Nuclear Nonproliferation	U.S. Plutonium Disposition (H-Canyon): Cumulative kilograms of plutonium converted to oxide at Savannah River H-Canyon. FY16 Target: 100kg, Result: 7.62 kg	Due to the protracted start-up issues and unpredictable operability of the aging nuclear facility, the production metric has been difficult to achieve and forecast. The program will continue with limited production. NNSA is revisiting whether or not long term use of the H-Canyon/HB-Line facilities is viable for this mission. This performance measure was rolled into one consolidated metric entitled U.S. Surplus Plutonium Disposition.
	U.S. Plutonium Disposition (LANL): Cumulative kilograms of plutonium metal converted to oxide at Los Alamos National Laboratory. FY16 Target: 667kg, Result: 667kg	This performance measure was rolled into the consolidated metric entitled U.S. Surplus Plutonium Disposition. The site identification has been eliminated.
	Emergency Operations Readiness Index (EORI) - EORI measures the overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.	This measure has been replaced with the Incident Response Readiness Index measure. The program mission has been

Program	Performance Goal Discontinued as of FY 2017	Rationale
	This index is measured from 1 to 100 with higher numbers meaning better readiness. FY16 Target: 91, Result: 89	expanded to develop and sustain the DOE all hazards capability. The new measure better aligns with current all hazards mission responsibilities.
	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".) FY16 Target: 100%, Result: 100%	Measure successfully completed.
Environmental Management	Material Access Areas Eliminated – Increase the cumulative number of Material Access Areas, (i.e., a high security location which contains special nuclear material) closed. FY16 Target: 34 Material Access Areas Eliminated, Result: 30	Additional progress on this measure is not anticipated prior to 2030.
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. FY16 Target: 71%, Result: 61%	Beginning in FY 2017, this goal is replaced with separate goals for Anti-Phishing, Malware Defense, and Other Defenses.
	Continuous Monitoring: Provide ongoing observation, assessment, analysis, and diagnosis of an organization's cybersecurity. FY16 Target: 69%, FY16 Result: 69%	Beginning in FY 2017, this goal is replaced with separate goals for Hardware Asset Management, Software Asset Management, Vulnerability Management, and Secure Configuration Management.

Program	Performance Goal Discontinued as of FY 2017	Rationale
	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. FY16 Target: 93%, Result: 47%	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.
Office of Management	Reduce travel expenses: Reduce non-mission essential travel expenses FY16 Target: 30%, Result: 30%	Measure successfully completed.

Evaluations Completed in Fiscal Year 2017

The following table displays the independent program evaluations that were completed in FY 2017 and their location (where available).

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
National Nuclear Security Administration/ Defense Nuclear Nonproliferation/ Nonproliferation and Arms Control/Nuclear Verification	Nuclear Noncompliance Verification (NNV) Program Pre-deployment Mission Area *Nuclear Noncompliance Verification Program Technical Meeting*	A panel of external experts met to consider the development of future training and exercises for NNV deployment readiness teams and the tools and technologies for on-site monitoring and verification activities. The panel was impressed with the history of NNV accomplishments and of the current investments and thinking under consideration for strengthening the program. Overall, panel members supported NNV efforts to increase the emphasis on deployment preparation, scenario-based training and exercises, broadening organic deployment team expertise, and improving comprehensive pre-deployment planning for rapid readiness for any on-site monitoring and verification mission.	George Anzelon - Lawrence Livermore National Laboratory Joseph Detrani - Consultant Olli Heinonen - Belfer Center for Science and International Affairs, Harvard Kennedy School Norman Hoerer - Defense Threat Reduction Agency Aviva Sussman - Los Alamos National Laboratory Copy available on request to the program.
Defense Nuclear Nonproliferation /Material Management and Minimization/ Convert	Mo-99 Program Annual Assessment of the NNSA M3 *Mo-99 Program*	Annual Assessment of the NNSA M3 Mo-99 Program. The assessment concluded that NNSA is progressing towards meeting the goals of the Mo-99 program. It included one recommendation that NNSA is currently working to implement.	Nuclear Science Advisory Committee https://science.energy.gov/~/media/np/nsac/pdf/docs/2016/Mo-99_NSAC-approved-2016.pdf

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
Office of Project Management	Project Management Career Development Program (PMCDP) *PMCDP Program Review*	The final report is the culmination of a study that DOE commissioned to obtain a comprehensive look at PMCDP. It summarizes the analysis undertaken and makes recommendations to strengthen PMCDP, its associated curriculum and guides, the Federal Project Director (FPD) certification process, and other areas related to the program. The major recommendations were: (1) add behavioral indicators to describe expected behaviors at the different proficiency levels for each competency; (2) update the competency model and the certification equivalency guidelines; (3) develop an overarching curriculum map; (4) consider formalizing specialized tracks for FPDs focused on different types of projects; (5) revise current and/or add new courses for key skills; (6) establish prerequisites for courses; (7) consider increasing rigor of concept testing at course conclusion; (8) streamline the certification application process; and more.	SJ Technologies - Review for Internal Use Only
Nuclear Energy	U.S. leadership in advanced nuclear R&D	Market at a tipping point; USG needs to restore US position; need for clear US policy for both LWR and advanced nuclear so all agencies speak with same voice; additional funding needed for	Nuclear Energy Advisory Committee https://energy.gov/sites/prod/files/2017/05/f34/NEACInternational

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
	NEAC International Subcommittee Report	DOE to help train personnel from emerging markets; many more findings	SubcommitteeReport April_6_2017.pdf
Advanced Manufacturing Office	Power America Institute *Power America Peer Review, May 9-10, 2017*	Review of the Power America Institute	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - No public report
Advanced Manufacturing Office	Institute for Advanced Composites Manufacturing Innovation (IACMI) *IACMI Peer Review, Aug 15-16, 2017*	Review of the Institute for Advanced Composite Manufacturing Innovation	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - No public report
Advanced Manufacturing Office	Manufacturing Demonstration Facility (MDF) *MDF Peer Review, April 12-13, 2017*	Review of the Manufacturing Demonstration Facility	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - No public report
Building Technologies Office	Active RD&D and deployment portfolios *2017 Building Technologies Office Peer Review, March 13-16, 2017*	Review of 109 active Building Technologies Office projects	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - https://energy.gov/eere/buildings/downloads/2017-building-

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
			technologies-office-peer-review-report
Building Technologies Office	HVAC, Water Heating, and Appliance portfolio *Benefit-Cost Evaluation of U.S. Department of Energy Investment in HVAC, Water Heating, and Appliance Technologies, September 2017*	R&D investments in BTO's HVAC, Water Heating, and Appliance portfolio have been worthwhile. They have saved between 1.4 to 5 quads of energy from 1971 through 2015, and resulting in an economic return of $24.5 billion net present value benefits and a 74 to 1 benefit-to-cost ratio at 7% discount rate.	RTI International - https://energy.gov/eere/buildings/downloads/benefit-cost-evaluation-us-department-energy-investment-hvac-water-heating
Solar Energy Technologies Office	Sustainable and Holistic INtegration of Energy Storage and solar PV (SHINES) portfolio *2017 SHINES Program Review, January 30, 2017, San Diego, CA*	Review to access progress made in the SHINES funding program	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies
Wind Energy Technologies Office	RD&D portfolio *Wind Energy Technologies Office 2014–2016 Project Peer Review, February 14–17, 2017*	Reviewed projects representing $185 million in RD&D funding from WETO's RD&D portfolio, both program and project-level aspects	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - Report expected to be released in 2018. https://energy.gov/eere/wind/wind-program-peer-reviews

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
Water Power Technologies Office	RD&D portfolio *2017 Water Power Technologies Office held its Peer Review, February 14–17, 2017*	Reviewed projects	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - https://energy.gov/eere/water/water-power-program-peer-reviews
Geothermal Technologies Office	RD&D portfolio *2017 Geothermal Technologies Office Peer Review November 13-15, 2017*	Review of the technical progress and merit of GTO-funded projects	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies
Vehicle Technologies Office	RD&D and analysis portfolio *2017 Vehicle Technologies Office Annual Merit Review and Peer Evaluation, June 5-9, 2017*	Review of the technical progress and merit of VTO-funded projects	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - https://energy.gov/eere/vehicles/downloads/2017-annual-merit-review-report
Hydrogen and Fuel Cell Technologies Office	RD&D and analysis portfolio *2017 Hydrogen and Fuel Cells Program Annual Merit Review and Peer Evaluation, June 5-9, 2017*	Review of the technical progress and merit of FCTO-funded projects	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - https://energy.gov/eere/vehicles/downloads/2017-annual-merit-review-report

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
Bioenergy Technologies Office	RD&D and analysis portfolio *2017 Bioenergy Technologies Office Project Peer Review, March 6–9, 2017*	Reviewed approximately 192 projects in the RD&D portfolio	Panels of independent external subject matter expert reviewers from industry, academia, and federal agencies - https://energy.gov/eere/bioenergy/peer-review-2017
Bioenergy Technologies Office	Overall Bioenergy Technologies Office *2017 Bioenergy Technologies Office Program Management Review, July 13, 2017*	Office-level review covering topics - topics: project portfolio impact, strategic plan clarity and comprehensiveness, budget priorities, partnership effectiveness, and emerging technologies and market trends	Steering Committee of independent external expert reviewers - https://energy.gov/eere/bioenergy/events/2017-program-management-review
Office of Strategic Programs Technology two Market (T2M)	National Incubator Initiative for Clean Energy (NIICE) program *NIICE peer review, December 2, 2016*	Reviewed effectiveness of NIICE funded projects, identified opportunities for course corrections, and identified early indicators of the value of NIICE investments	Panel of independent external subject matter experts in relevant fields
Office of Strategic Programs Technology two Market (T2M)	Small Business Vouchers (SBV) Pilot *Baseline and Process Evaluation of Small Business Vouchers Pilot, December 2016*	Quantified early stage impacts SBV pilot	Research Into Action Inc., NMR Group Inc. - Baseline and Process Evaluation of Small Business Vouchers Pilot

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
Office of Strategic Programs Technology two Market (T2M)	Energy I-Corps *Evaluation of the Lab-Corps Pilot – final report, November 2016*	Quantified early stage impacts of Energy I-Corps program	Research Into Action Inc., NMR Group Inc. - Evaluation of the Lab-Corps Pilot – final report
Office of Energy Electricity Delivery and Energy Reliability - Advanced Grid R&D (AGR&D)	RD&D Portfolio *2017 Transmission Reliability Program Peer Review*	Peer Review Committees assess whether a project is a good use of DOE Funds, how the project could be improved, and whether a project should be continued or terminated. Results inform programmatic decisions.	Transmission Reliability Program Peer Review Committee - https://energy.gov/oe/downloads/2017-transmission-reliability-program-peer-review-june-13-presentations https://energy.gov/oe/downloads/2017-reliability-markets-peer-review-presentations
Office of Energy Electricity Delivery and Energy Reliability - Advanced Grid R&D (AGR&D)	RD&D Portfolio *2017 Reliability & Markets Program Peer Review*	Peer Review Committees assess whether a project is a good use of DOE Funds, how the project could be improved, and whether a project should be continued or terminated. Results inform programmatic decisions.	Reliability & Markets Program Peer Review Committee – https://energy.gov/oe/downloads/2017-transmission-reliability-program-peer-review-june-13-presentations https://energy.gov/oe/downloads/2017-reliability-markets-peer-review-presentations
Office of Energy Electricity Delivery and Energy	Grid Modernization Initiative (GMI)	Results were used to inform programmatic decision making, modify existing projects, guide future funding opportunities, and support other	GMI Peer Review Committee - https://energy.gov/under-secretary-science-and-energy/2017-grid-modernization-initiative-peer-review

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
Reliability - Advanced Grid R&D (AGR&D)/Energy Efficiency and Renewable Energy	*Foundational Projects and Technical Area Portfolio Peer Review of the Grid Modernization Laboratory Consortium*	budget and strategic planning objectives for accelerating the development of grid modernization technology.	
Office of Energy Electricity Delivery and Energy Reliability - Advanced Grid R&D (AGR&D)	Advanced Distribution Management Systems (ADMS) *ADMS Program Review*	The review assessed the progress of R&D projects.	ADMS Industry Steering Committee - N/A for public release
Office of Energy Electricity Delivery and Energy Reliability	Resiliency of the Electric Power Grid *Enhancing the Resiliency of the Nation's Electricity System*	The study highlights key areas that require focus to identify, develop, and implement strategies to increase the power system's resilience. The report provides recommendations. DOE will consider these recommendations as the Department evaluates opportunities for public-private partnerships and program activities.	National Academies of Sciences, Engineering, Medicine - https://www.nap.edu/catalog/24836/enhancing-the-resilience-of-the-nations-electricity-system
Office of Energy Electricity Delivery and Energy Reliability -	RD&D Portfolio *2017 Energy Storage Program Peer Review*	Peer Review Committees assess whether a project is a good use of DOE Funds, how the project could be improved, and whether a project should be continued or terminated. Results are used to inform programmatic decisions.	2017 Energy Storage Program Peer Review Committee - International panel of experts drawn from academia, industry, utilities, and the regulatory community. Presentations included in the Peer Review are available to the public at:

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
Advanced Grid R&D (AGR&D)			http://www.sandia.gov/ess/publication/conference-archives/ . The reviews of individual projects are confidential. A summary of the reviewer comments will be made available to the public.
Office of Energy Electricity Delivery and Energy Reliability - Cybersecurity for Energy Delivery Systems (CEDS)	Cybersecurity for Energy Delivery Systems (CEDS) *CEDS R&D 2016 Peer Review*	Peer Review Committees assess whether a project is a good use of DOE Funds, how the project could be improved, and whether a project should be continued or terminated.	Peer Reviewers - https://www.energy.gov/oe/downloads/cybersecurity-energy-delivery-systems-2016-peer-review
Fossil Energy	Regional Carbon Sequestration Partnerships (RCSP) *RCSP Expert Peer Review*	Review of the RCSP program and select projects accomplishments, goals, and future activities	International Energy Agency Greenhouse gas Programme (IEAGHG) - http://www.ieaghg.org/exco_docs/2017-TR11.pdf
Fossil Energy	Solid Oxide Fuel Cells (SOFC) *SOFC Expert Peer Review*	Review of the SOFC program and select projects accomplishments, goals, and future activities	Keylogic Systems - https://www.netl.doe.gov/research/coal/publications/peer-reviews
Science - Advanced Scientific Computing	Assess impacts and process of the DOE Laboratory Directed Research and	See *Executive Summary* of the Study	Advanced Scientific Computing Advisory Committee (ASCAC) - https://science.energy.gov/~/media/ascr/ascac/pdf/charges/2017/REPORTLDRDMay09.pdf

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
	Development (LDRD) activities *Independent review of Laboratory Directed Research and Development (LDRD) work of the DOE Laboratories (Labs)*[1]		
Science - Basic Energy Sciences	Assess the management of the SC Energy Frontier Research Centers and the Energy Innovation Hubs for fiscal years 2013-2016 *Committee of Visitors Review Report of the Energy Frontier Research Centers and the Energy Innovation Hubs*	See *Executive Summary* of the Report	Basic Energy Sciences Advisory Committee (BESAC) - https://science.energy.gov/~/media/sc-2/pdf/cov-bes/2016/BES_COV_2016_EFRC_HUBS_Report.pdf
Science - High Energy Physics	Assess the management of the SC High Energy Physics	See *Executive Summary* of the Report	High Energy Physics Advisory Panel (HEPAP) - https://science.energy.gov/~/media/sc-2/pdf/cov-hep/2016/

[1] In response to the June 17, 2015, interim report of the Secretary of Energy Advisory Board (SEAB) Task Force on DOE National Laboratories which recommended an independent peer review of the LDRD program impacts and process.

Office	Program, Topic or Area Evaluated and Name of Study	Brief Description	Evaluators and Hyperlink to Completed Evaluation
	(HEP) Program for fiscal years 2013-2015 *Committee of Visitors Review Report of the High Energy Physics (HEP) Program*		HEP_COV_2016_Report.pdf
Science - Office of Workforce Development for Teachers and Scientists (WDTS)	Assess the management of the SC Office of Workforce Development for Teachers and Scientists (WDTS) *Committee of Visitors review of the Office of Workforce* *Development for Teachers and Scientists (WDTS)*	See *Summary of COV Program Rankings and Recommendations* of the COV Report	Basic Energy Sciences Advisory Committee (BESAC) - https://science.energy.gov/~/media/sc-2/pdf/cov-wdts/2016/WDTS_COV_2016_Report.pdf

Goals to Address Management Priorities

DOE's Agency Financial Report, available at https://energy.gov/cfo/listings/agency-financial-reports, provides a complete description of DOE's Management Priorities as well as a discussion of progress to date and planned actions to address these priorities. The table below provides a summary of each challenge along with the related performance goals and milestones, and the responsible DOE official.

Management Priority	FY 2017 Related Performance Goals / Indicators / Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Contract and Major Project Management: *Responsible Officials:* *Under Secretary for Management and Performance* *Director, Office of 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. Contractors at DOE sites and laboratories perform critical missions that include maintaining the nuclear weapons stockpile, cleaning up radioactive and hazardous waste resulting from the legacy of the Manhattan Project, and conducting some of the world's most sophisticated basic and applied energy and scientific research activities. To conduct these missions, the Department must manage some of the largest, most complex capital asset projects in either the public or private sector.	**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. Result: Not Met (88%)	**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.

Management Priority	FY 2017 Related Performance Goals / Indicators / Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Security: *Responsible Official: Associate Under Secretary for Environment, Health, Safety and Security* Ensure the security of national assets entrusted to DOE while enhancing the Department's productivity to achieve mission objectives.	**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. Result: Met – DOE-STD-1227-2017, Insider Threat Working Group, Structure, Roles, and Response Actions, was completed. • Administration of FY 2017 Insider Threat Training for Cleared Personnel. Result: Met – Insider Threat training was included in the Headquarters Annual Security Refresher Briefing (ASRB). • Conduct of quarterly Site Assistance Visits to assist Local Insider Threat Working Groups in the establishment and administration of their programs. Result: Met – Site assistance was provided to Bonneville Power Administration, Pantex, Western Area Power Administration, Waste Isolation Power Plant, and the Kansas City National Security Campus Local Insider Threat Working Groups. **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 Performance Measures:**	**Implement an insider threat program to detect, deter, and mitigate insider threat actions by federal and contractor employees.** **FY 2018 Performance Measures**: • Development of Departmental Insider Threat Program Training/Communication/Awareness/Education 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. **FY 2019 Performance Measures**: • Administration of FY 2019 Insider Threat Training for Cleared Personnel. • Conduct of Site Assistance Visits to assist Local Insider Threat Working Groups in the establishment and administration of their programs. **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.**

Management Priority	FY 2017 Related Performance Goals / Indicators / Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	• Site assistance visits provided within 30 days of field request Result: Met – Over 20 site assistance visits were performed, all within 30 days of the field request. • Waivers and exemptions processed within 60 days of program office request Result: Met – 17 waivers/exemptions were processed, all within 60 days of receiving the program office request with all needed supporting information. **Update information classification policy and guidance to stay abreast of emerging programs, technologies, and threats in order to protect national security interests.** **FY 2017 Performance Measures:** • Manage information declassification actions to ensure coordination within 90 days of Technical Evaluation Panel recommendations. Result: Met – All declassification actions were in coordination within 90 days of Technical panel recommendations. • Examine Unclassified Controlled Nuclear Information scope for expanded use in weapons information. Result: Met – In FY 2017 Unclassified Controlled Nuclear Information was examined for its potential use in weapons information.	**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. **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 2018 and FY 2019 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	FY 2017 Related Performance Goals / Indicators / Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	• Update at least ten guides and bulletins. Result: Met – 23 classification guides and 12 bulletins, and six local guides were completed.	**Update information classification policy and guidance to stay abreast of emerging programs, technologies, and threats in order to protect national security interests.** **FY 2018 Performance Measure:** • Develop a policy guidance bulletin for procurement activities. **FY 2018 and FY 2019 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.

Management Priority	FY 2017 Related Performance Goals / Indicators / Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Environmental Cleanup: *Responsible Official: Environmental Management* For over 25 years, EM has worked to clean up the environmental legacy of five decades of nuclear weapons production and government-sponsored energy research. While significant progress has been made, some of the highest risk and most technically complex work still remains.	**Safely clean up the environmental legacy brought about by five decades of nuclear weapons development and government-sponsored nuclear energy research.** **FY 2017 milestones:** • Restart waste emplacement at the Waste Isolation Pilot Plant by the end of Q1 FY 2017 Result: Met. WIPP was reopened in December 2017. Waste emplacement was restarted January 4, 2017. • Complete demolition to achieve slab on grade of the Plutonium Finishing Plant at Richland by the end of FY 2017 FY 2017 Result: Not Met.	**Safely clean up the environmental legacy brought about by five decades of nuclear weapons development and government-sponsored nuclear energy research.** **FY 2018 milestones:** • Resume mining operations at the Waste Isolation Pilot Plant (WIPP) • Complete treatment for legacy Remote-Handled Transuranic waste at the Idaho Site • Declare first process building (X-326) demolition ready at Portsmouth • West Valley Demonstration Project Vitrification Facility - Demolished to Grade and removed **FY 2019 milestones:** • Start-up the Salt Waste Processing Facility with planned processing rates of 3,800,000 gallons at Savannah River Site • Submit the fifth WIPP Compliance Recertification Application to the Environmental Protection Agency • Complete demolition of the C-400 Cleaning Building at the Paducah Site 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.

Management Priority	FY 2017 Related Performance Goals / Indicators / Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Spent Nuclear Fuel and High-Level Waste Disposal: *Responsible Official: Assistant Secretary for Nuclear Energy* 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 (SNF) in a manner that protects public health, safety, and the environment.		**FY 2019 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.

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Cybersecurity: *Responsible Official: Chief Information Officer* Today's rapidly evolving cyber landscape presents unprecedented opportunities and challenges. Achieving a safe, secure, and resilient cyber environment requires DOE to continually pursue cost effective investments and activities to reduce cyber risk. Cyber is an enterprise-wide responsibility that demands an expanded view to encompass the broad scope of information sharing and information safeguarding.	**Information Security Continuous Monitoring** Identify – Hardware Asset Management: • Achieve performance of 95% or greater for both Hardware Asset Management metrics (asset detection and asset meta data collection) Result: Not Met – 85% Identify – Software Asset Management: • Achieve performance of greater than or equal to 95% for both Software Asset Management metrics (software inventory and software white-listing) Result: Not Met – 91% Protect – Vulnerability Management: • Achieve performance greater than or equal to 95% for the detection of hardware and software vulnerability and weakness management Result: Met – 99% Protect – Secure Configuration Management: • Achieve performance greater than or equal to 95% for Secure Configuration Management Result: Met – 99% **Identity, Credential, and Access Management:** Protect - MFA - Unprivileged Network Account performance: • Unprivileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 85%. Target: 85%. Result: Not Met – 66%	**Information Security Continuous Monitoring** Identify – Hardware Asset Management: • Achieve performance of 95% or greater for both Hardware Asset Management metrics (asset detection and asset meta data collection) Identify – Software Asset Management: • Achieve performance of greater than or equal to 95% for both Software Asset Management metrics (software inventory and software white-listing) Protect – Vulnerability Management: • Achieve performance greater than or equal to 95% for the detection of hardware and software vulnerability and weakness management Protect – Secure Configuration Management: • Achieve performance greater than or equal to 95% for Secure Configuration Management **Identity, Credential, and Access Management:** Protect - MFA - Unprivileged Network Account performance: • Unprivileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 85%. FY 2018 Target: 85% FY 2019 Target: 85% Protect - MFA - Privileged Network Account performance

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	Protect - MFA - Privileged Network Account performance • Privileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 100%. Target: 100% Result: Not Met – 96% Protect – Federated Identity Management Infrastructure • Implement Federated Identity Management infrastructure linking identity sources across DOE to OneID. Target: 75% Result: Not Met – 62% Protect - Standards Based Fed Access Mgmt Infrastructure • Implement Standards Based Federated Access Management Infrastructure across DOE to enable single sign-on Target: 50% Result: Met – 51% Protect - High-Priority Application Authentication • Conduct a role-based risk assessment for all applications supporting high priority (FISMA) systems, identify the proper credential for each role within the application in accordance with the revised NIST 800-63 standard, and require the use of the proper credential for role-based access to the application. Target: 10% Result: Not Met – 0% **Anti-Phishing and Malware Defense (APMD):** Detect – Anti-Phishing	• Privileged Network Accounts that use a PIV credential or other NIST 800-63 r3 IAL3/AAL3/FAL3 must be equal to 100%. FY 2018 Target: 100% FY 2019 Target: 100% Protect – Federated Identity Management Infrastructure • Implement Federated Identity Management infrastructure linking identity sources across DOE to OneID. FY 2018 Target: 95% FY 2019 Target: 95% Protect - Standards Based Fed Access Mgmt Infrastructure • Implement Standards Based Federated Access Management Infrastructure across DOE to enable single sign-on FY 2018 Target: 95% FY 2019 Target: 95% Protect - High-Priority Application Authentication • Conduct a role-based risk assessment for all applications supporting high priority (FISMA) systems, identify the proper credential for each role within the application in accordance with the revised NIST 800-63 standard, and require the use of the proper credential for role-based access to the application.

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	• Performance on Anti-Phishing measurements must be greater than or equal to 90% on at least 5 of 7 capabilities Result: Met – 6 <u>Detect – Malware Defense</u> • Performance on Malware Defense measurements must be greater than or equal to 90% on at least 3 of 5 capabilities Result: Met – 3 <u>Detect – Other Defenses (capabilities related to Anti-Phishing & Malware)</u> • Performance of "Other Defenses" measurements to include specific Anti-Phishing and Malware capabilities must be greater than or equal to 90% on at least 2 of 4 capabilities. Result: Met – 2	FY 2018 Target: 30% FY 2019 Target: 50% **Anti-Phishing and Malware Defense (APMD):** <u>Detect – Anti-Phishing</u> • Performance on Anti-Phishing measurements must be greater than or equal to 90% on at least 5 of 7 capabilities <u>Detect – Malware Defense</u> • Performance on Malware Defense measurements must be greater than or equal to 90% on at least 3 of 5 capabilities <u>Detect – Other Defenses (capabilities related to Anti-Phishing & Malware)</u> • Performance of "Other Defenses" measurements to include specific Anti-Phishing and Malware capabilities must be greater than or equal to 90% on at least 2 of 4 capabilities.

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Human Capital Management: *Responsible Official: Chief Human Capital Officer* DOE requires an engaged and high-performing federal workforce to accomplish its mission. Key human capital challenges include: • Mitigating the risk to mission from employee attrition, including increased retirement eligibility; • Mitigating succession risks, as evidenced by the increasing age of the workforce; • Strengthening employee engagement, as indicated by measures of employee engagement and employee perceptions of agency leadership; and • Increasing the efficiency and effectiveness of human resources (HR) services when compared to Government benchmarks.	• Annual Reductions in Average time to hire. Target: 80 calendar days. Result – Not Met – 119.3 days • Implement a framework for performance-based culture - Percent of SES with compliant plans. Target: >= 90% Result: 92%	• Annual Reductions in Average time to hire. FY 2018 Target: 80 calendar days. FY 2019 Target: 80 calendar days. • Implement a framework for performance-based culture - Percent of SES with compliant plans. FY 2018 Target: >= 90% FY 2019 Target: N/A (measure discontinued) • Retention of a high performing workforce - Increase the retention of a high performing workforce FY 2019 Target: < 38 % of all attrition is made up of High Performing Employees

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Safety: *Responsible Official: Associate Under Secretary for Environment, Health, Safety and Security* 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.	**Assist program offices in continuing DOE's excellent safety performance at levels exceeding industry performance.** **FY 2017 Performance Measure:** • DOE occupational illness and injury incidence rates and days away from work due to illness and injury cases less than industry. Result: Met – DOE's total recordable case injury and illness incidence rates for FY 2017 were 0.8 per 200,000 work hours as compared to the industry average of 2.9 per 200,000 work hours. Days away from work due to illness and injury case rates were 0.4 per 200,000 work hours as compared to the industry average of 1.6 per 200,000 work hours. **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.**	**Assist program offices in continuing DOE's excellent safety performance at levels exceeding industry performance.** **FY 2018 and FY 2019 Performance Measure:** • DOE occupational illness and injury incidence rates and days away from work due to illness and injury cases less than industry. **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 2018 and FY 2019 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. **Develop, pilot and deliver safety culture courses for DOE for each of the following three audiences: senior managers, front line managers, and employees.**

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	FY 2017 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. FY 2017 Result: Met – In FY 2017 the Operating Experience program: (1) collected and distributed operating reports issued by Program and Field Office on a daily basis; (2) issued three Operating Experience Summaries to exchange lessons-learned information between DOE facilities; and (3) issued eight Operating Experience Level 3 (OE-3) documents to inform senior HQ and field management of events/trends that warranted attention by Senior HQ or Field Management. The program also developed a nuclear safety information dashboard to support DOE review of nuclear safety performance and potential issues to focus on. Data on lessons/practices	**FY 2018 Performance Measures:** • The number of individuals in each category trained per year. **Deliver safety culture courses for DOE for each of the following three audiences: senior managers, front line managers, and employees.** **FY 2019 Performance Measure** • The number of DOE Organizations providing safety culture training.

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	adopted by sites, the number of self-assessments conducted, and the number of sites actively measuring safety culture performance will be collected for the FY18 report. **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 Performance Measures:** • The number of individuals in each category trained per year. Result: Met – DOE institutionalized the inclusion of safety culture training into its onboarding program for new DOE senior leaders. The National Training Center (NTC) continued to provide an 8 hour senior manager course on safety culture (TLP-200 *Safety Culture for DOE & DOE Contractors Senior Leaders*). The training has been presented to over 2,000 senior managers and front line. The NTC also developed a train-the-trainers course on Safety Culture (TLP-151 *Train the Trainer Safety Culture for Front Line Leaders*) front line	

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
	supervisors and provided it to 135 individuals, representing over 20 different DOE organizations or contractors, to support their safety culture training efforts. The NTC began development of safety culture course for workers (TLP-100 *Safety Culture for Workers*) which should be completed in FY18.	

Management Priority	FY 2017 Related Performance Goals/Indicators/Milestones	FY 2018 / 2019 Related Performance Goals / Indicators / Milestones
Infrastructure: *Responsible Official: Director, Office of Management* 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 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.	**Decrease percentage of unassessed DOE Buildings, OSFs and Trailers (excluding FERC, LM, NR and PMAs).** **FY 2017 Performance Measure:** • Decrease of 5% below the FY 2016 baseline of 12.38% of buildings unassessed Result: Exceeded – 11% The metric was calculated based on replacement plant value due to the various types of real property. In FY 2016, unassessed assets had been at 12%. For FY 2017, unassessed assets are at 1%, a reduction of 11%.	**Functional Assessments – Maintain a level of assessment for DOE owned and "active" Buildings, Trailers and Structures (excluding FERC, LM, NR and PMAs) based on replacement plant value and an assessment having occurred within five fiscal years.** **FY 2018 Performance Measure:** • 90% **FY 2019 Performance Measure:** • 90% **Energy and Water Sustainability Performance - In accordance with statutory and executive order requirements DOE will perform a sufficient number of building evaluations, such that, in a four-year period, at least 90% of owned buildings and/or square footage will be assessed for energy & water efficiency opportunities and incorporation of sustainability principles as required.** **FY 2018 Performance Measure:** • 90% **FY 2019 Performance Measure:** • 90%