U.S. Department of
ENERGY

2017 Strategic Sustainability Performance Plan

Report to The White House
Council on Environmental Quality
and Office of Management and Budget

August 2017

U.S. Department of Energy

2017 Strategic Sustainability Performance Plan

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Policy Statement

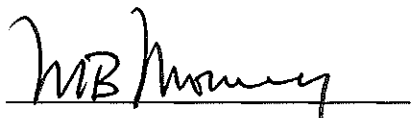
DOE 2017 Strategic Sustainability Performance Plan Policy Statement

The mission of the Department of Energy (DOE or the Department) is to ensure America's security and prosperity by addressing energy, environmental, and nuclear challenges through transformative science and technology solutions. DOE thus recognizes its responsibility to remediate resources impacted by past activities, and to carry out current activities in a sustainable manner that minimizes impacts to air, land, and water.

As an agency, DOE believes that in addition to benefitting the environment, sustainability makes good business sense. For this reason, the Department prioritizes life-cycle-cost-effective strategies to reduce energy and water use, and to minimize waste. One of the primary ways these strategies are implemented is through Performance Contracts. These public-private partnerships allow DOE to address necessary improvements in energy and water infrastructure at no cost to the taxpayer, while creating jobs and investment opportunities in the private sector. DOE's recent award of its third generation Energy Savings Performance Contract (ESPC) Indefinite Delivery, Indefinite Quantity (IDIQ) contract will enable the Department and other Federal agencies to continue to optimize building performance, increase energy and water efficiency, and enhance energy security for many years to come.

Since much of the work carried out at DOE's National Laboratories involves the development of technologies and processes that reduce energy and water consumption, air and water pollution, and the generation of waste, sustainability is fundamental to our mission. DOE will therefore continue to leverage the science produced by our National Laboratories to improve the sustainability of the Department, the rest of the Federal government, and the nation as a whole.

This document constitutes the Department's 2017 Strategic Sustainability Performance Plan. It presents both broad strategies and specific approaches for meeting the sustainability goals embodied in legislation and Executive Orders. By way of this plan, DOE pledges to continue to be a leader in the Federal government, working aggressively to achieve sustainability goals through teamwork, continuous improvement, and a deep commitment to protecting natural resources and the environment.



Matthew B. Moury
Acting Chief Sustainability Officer

Executive Summary

Goal 1 – Greenhouse Gas Reductions

DOE has achieved significant reductions in Greenhouse Gas (GHG) emission reductions. In FY 2016, DOE reduced Scope 1 & 2 (direct) and Scope 3 (indirect) GHG emissions by 42.3 and 15.5 percent, respectively, compared to the 2008 baseline levels. By FY 2025, DOE's goal is to reduce Scope 1 & 2 GHG emissions by 50 percent and Scope 3 GHG emissions by 25 percent, each relative to the FY 2008 baseline.

Employee commuting is the largest contributor to DOE's Scope 3 emissions, accounting for 57.4 percent of the Department's total. To reduce these emissions, DOE encourages the use of mass transit, carpooling, and vanpooling and also promotes teleworking, teleconferencing, and alternative work schedules. By December 2016, DOE had installed 253 electric vehicle charging stations for both fleet and workplace reimbursable charging at various field locations. DOE is continuing its effort to evaluate barriers to improving employee commuting and increasing telework. Transmission and distribution (T&D) losses are another contributor to DOE's Scope 3 GHG emissions. As the Department expands on-site renewable and clean energy generation at its sites, T&D loss emissions should decrease. DOE will also focus on implementing cost-effective conservation measures to maximize efficiency, including utilization of Energy Savings Performance Contracts (ESPC).

Goal 2 – Sustainable Buildings

The Department conducts its mission in a large and diverse portfolio of buildings. These buildings include unique scientific laboratories, accelerators, light sources, supercomputers, data centers, industrial facilities, as well as traditional office space environments.

DOE will strive to reduce energy intensity 25 percent by FY 2025, by reducing 2.5 percent each year, relative to a FY 2015 baseline of 155,699 Btu per gross square foot of building space. DOE will actively promote the use of sound energy management, cost-effective energy conservation measures, and building-level and data center metering to meet this goal. DOE also plans to expand the design and implementation of net zero buildings. The FY 2025 target for net zero energy, waste, and/or water buildings is 1 percent of existing building stock over 5,000 gross square feet, or approximately 30 buildings, consisting of both new facilities and retrofits of existing facilities.

Through FY 2016, 8.3 percent of the Department's building stock complied with the Guiding Principles for Sustainable Federal Buildings (Guiding Principles). DOE made significant progress over the past year to improve sustainable building performance. In FY 2016, DOE added 15 buildings to its green building portfolio, for a total of 189 Guiding Principles-compliant buildings. This represents more than a 9 percent increase in High Performance Sustainable Buildings (HPSB) compliant facilities over FY 2015 performance. DOE set a target of 17 percent by building count complying with the Guiding Principles by 2025.

Goal 3 – Clean and Renewable Energy

DOE significantly expanded on-site renewable energy generation across the complex. In FY 2016, DOE's renewable energy performance amounted to 24.1 percent of total electricity use. DOE's performance is attributed to developing on-site renewable energy projects, awarding renewable energy siting bonuses, and purchasing renewable energy credits. This progress places DOE on track to meet the

goal of 30 percent renewable energy by FY 2025, as set in Executive Order (E.O.) 13693. In addition to striving to meet the renewable electricity goal, DOE will implement clean energy technologies to meet the E.O. goal of 25 percent of building thermal and electric energy from clean energy sources by 2025. DOE developed several large-scale on-site renewable energy projects, with many financed through performance-based energy contracts, including ESPCs.

The economic feasibility of large renewable energy systems continues to challenge DOE sites, as low-cost electricity extends payback periods to the point that they are not cost effective. However, DOE will continue to encourage the inclusion of on-site renewable generation into all new construction projects. This and DOE's policy on purchase preference for renewable energy from Indian tribes per the Department's authorities under the Energy Policy Act (EPAct) of 2005 will propel DOE toward the 30 percent target by FY 2025.

Goal 4 – Water Use Efficiency and Management

Water is essential to the DOE mission, as industrial processes account for the majority of DOE's potable and non-potable water use. Many DOE sites use water for evaporative cooling towers, process heat removal, cooling accelerators, supercomputers, and data centers. The reliance on water-intensive mission-critical activities presents a unique challenge for DOE in meeting the E.O. 13693 water use reduction goals.

The Department is currently on track to meet the goal of a 36 percent reduction in potable water use intensity by FY 2025. As of FY 2016, DOE reduced potable water intensity by 29.3 percent relative to the FY 2007 baseline, well exceeding the interim target of 18 percent. DOE's performance can be attributed to the efforts of several large water consuming sites that upgraded processes in FY 2015, although DOE continues to seek opportunities to reduce potable water consumption.

Cooling demand for supercomputers and scientific processes continues to make future progress difficult to predict. The Department will continue to employ proactive water management strategies and pursue alternative water options to reduce potable water use, including water reclamation and reuse. Several DOE sites are converting once-through cooling systems to closed-loop and reusing process water or gray water and/or storm water runoff.

DOE will work to maintain success over the next few years as water-intensive mission-related activities increase. In 2016, DOE prepared and disseminated a Strategy Water Management Plan that analyzed sites' potential for achieving water consumption reductions, and provided an implementation plan to accomplish them. The Plan prioritized water measures that hold the highest potential to reduce DOE's overall water use. Analysis in the Plan concluded that the highest impact and most cost-efficient water conservation measure is reducing water use through operational changes and best management practices, followed by increasing water efficiency by retrofitting and replacing equipment and processes, and finally, leveraging third party financing to implement capital projects through ESPCs and utility energy service contracts (UESCs). DOE disseminated the best practices in the Plan to DOE sites with the largest water-consuming end-uses and will be monitoring water usage at these sites.

Goal 5 – Fleet Management

DOE promotes fleet management practices that increase the acquisition and use of alternative fuel vehicles and encourages practices to reduce petroleum consumption. In FY 2016, DOE's use of

alternative fuel was 31.1 percent of total fuel use. DOE has increased its alternative fuel use by 183.3 percent from the FY 2005 baseline year. This places the Department well ahead of the E.O. 13693 goal of a 10 percent increase compared to the FY 2005 baseline. DOE is currently meeting or exceeding interim goal targets for petroleum use, alternative fuel use, and alternative fuel vehicle acquisition.

DOE will continue its efforts to reduce fleet-related GHG emissions by promoting vehicle right-sizing, fleet optimization, and the use of the alternative fuel locator tool. DOE will also continue to explore use of alternative fuels, especially in its heavy duty (HD) fleet, the single largest contributor to DOE fleet-wide GHG emissions. DOE is poised to start displacing up to 600,000 gallons of diesel and biodiesel (B-20) with HDRD/R-99 for HD vehicles at two sites and is under discussions with two additional sites to switch to this fuel. Renewable diesel (RD) is essentially any diesel fuel produced from a renewable feedstock that is predominantly hydrocarbon (not oxygenates) and meets the requirements for use in a diesel engine.

Goal 6 – Sustainable Acquisition

DOE continues to meet or exceed its sustainable acquisition goals and requirements. Federal policy requires all agencies to purchase environmentally preferable products and services that use less energy and water, reduce or eliminate waste at the source, promote the use of nontoxic or less toxic substances, implement conservation techniques, and reuse materials rather than put them into the waste stream. In FY 2016, DOE achieved 98.5 percent for applicable new actions that included sustainable clauses and provisions, as determined by quarterly sustainable acquisition contract reviews.

In 2016, DOE released a federally accredited sustainable acquisition web-based training program. This training was peer reviewed by other agencies including the General Services Administration (GSA) and is available to all Federal agencies. Additionally, to help purchasers effectively navigate sustainable acquisition requirements, DOE developed the GreenBuy Award Program which is based on a list of products with goals to embody leadership-level sustainability attributes. The Priority Products List is a compilation of product types, in eight categories, that depicts products with the biggest environmental, social, and economic impact.

The Priority Products list can be accessed on GSA's Green Procurement Compilation tool to facilitate the procurement of the products. This tool enables Federal purchasers to quickly identify the designated products and associated guidance to facilitate green purchasing decisions. In addition, the tool can also help with verifying sustainable attributes of a product.

In FY 2017, DOE will continue to work closely with the Environmental Protection Agency (EPA) and GSA to identify environmentally preferable products and services that meet or exceed specifications, standards, or labels to be recommended by EPA.

Goal 7 - Pollution Prevention & Waste Reduction

The Department will work to prevent or reduce pollution at its source wherever feasible. Pollutants and waste that cannot be prevented through source reduction will be diverted from entering the waste stream through environmentally safe and cost-effective reuse or recycling initiatives. Disposal or other releases into the environment will be considered only as a last resort, and will be conducted in compliance with all applicable environmental requirements.

In accordance with the goals prescribed by E.O. 13693, the Department will continue its efforts to divert at least 50 percent of non-hazardous solid waste and non-hazardous construction and demolition materials and debris annually. During FY 2016, the Department diverted 69.2 percent of its non-hazardous solid waste and 66 percent of its non-hazardous construction and demolition debris through the implementation of various recycling, recovery and reuse methods and strategies.

The Department will continue to search for strategies to further increase non-hazardous solid waste diversion rates, and to pursue opportunities to implement additional net-zero waste initiatives. The Department will track the acquisition and use of hazardous and toxic chemical and materials (at the site level), and will continue to promote the use of less toxic chemicals and materials whenever feasible.

The Department has reduced its total fugitive emissions since FY 2008 by 45 percent. However, during FY 2016, SF_6 and other GHG fugitive emissions increased by 25 percent (i.e., the percent change from FY 2015). The Department will assess the bases for these increases, and will continue to pursue strategies and opportunities to further reduce fugitive emissions of SF_6 and other potent GHGs.

In addition to SF_6, DOE sites track emissions of mixed refrigerants, fugitive fluorinated-gases, and industrial process emissions. DOE will continue to maintain its Fugitive Emissions Workgroup, which includes representatives from Departmental elements that are significant users of fluorinated gases, to stay abreast of emerging issues and to share information and best practices (on inventory management, monitoring and control technologies, reporting, and environmentally preferable substitutes for high-impact fugitive GHGs).

Goal 8 – Energy Savings Performance Contracts

Performance-based contracts are an important component of DOE's approach to integrating sustainability into all aspects of its mission. Implementing projects that save energy and water and reduce deferred maintenance is critical to ensuring efficient, effective and sustainable operations. The Department understands the capabilities of performance contracting to make improvements that would have been otherwise difficult to attain. Since DOE began participating in the ESPC program in the late 1990s, total project investment has reached over $550 million.

The Facilities and Infrastructure Restoration and Modernization (FIRM) initiative is a program designed to help DOE sites explore opportunities to achieve energy savings and upgrade aging infrastructure through the use of performance-based contracts. Viable projects are increasingly difficult to find, due to the number of energy and water efficiency upgrades that the Department has implemented over the years, under performance-based contracts and conventional funding methods. The FIRM initiative aims to help overcome these barriers by bringing together sites, programs, and experts from FEMP, National Laboratories, and the private sector.

Goal 9 – Electronics Stewardship & Data Centers

The Department addresses the lifecycle impacts of electronic equipment and data centers by identifying, implementing and maintaining best lifecycle management practices. Each year, DOE purchases efficient electronic products such as those recognized as Electronic Product Environmental Assessment Tool (EPEAT)-registered, ENERGY STAR certified, and low standby power. DOE made significant improvements in power management implementation, the result of targeted technical assistance in 2015 and 2016. DOE also used targeted technical assistance in 2016 to assist sites in finding, and transitioning to, certified electronics recyclers. The average power usage effectiveness (PUE) for all

metered, tiered, agency owned, and enduring data centers has improved from 1.7 in 2016 to 1.6 in 2017 to date.

DOE continues to support interagency electronics stewardship activities, co-chairing the Federal Electronics Stewardship Working Group and participating in the Data Center Optimization Initiative Working Group. In 2016, DOE deployed comprehensive, job-based, electronics stewardship training for Department staff and contractors.

DOE is committed to ensuring at least 95 percent of all covered electronics acquired meet Federal recommendations for environmental performance; 100 percent of computer desktops, laptops, and displays have power management features enabled; print management and automatic duplexing are utilized across the Department; and 100 percent of used electronics are responsibly reused and recycled. The Department is also on track to meet the data center 1.5 PUE goal, by the end of FY 2018.

A continuing challenge in the federal government is the consolidation and optimization of its data centers. DOE, like many agencies faces these challenges but is proud to report significant progress in meeting aggressive goals as expressed in E.O. 13693 and within the Data Center Optimization Initiative (DCOI) Strategic Plan. We are on track to meeting performance goals for Facility Utilization, Energy Metering, PUE, and Server Monitoring by EOY 2018. We are ahead of goals for Virtualization, Closures, and Cost Savings/Avoidance.

In our most current Data Center inventory we are reporting 279 data centers of which 91 are closed or closing. This represents an overall reduction of 33% of our data center inventory (a reduction of 13% of our data center footprint indicating a significant push in closing and consolidating small and inefficient data centers).

A key element in the DCOI as well as E.O. 13693 for Data Centers is the installation and operation of automated power and server metering systems. DOE is investing in an Enterprise Data Center Infrastructure Management (eDCIM) system that will automate Data Center performance monitoring and reporting and provide baseline data for identifying optimization and consolidation projects within DOE. Our aggressive eDCIM rollout will start at the end of FY 2017 and we plan to have it implemented at all our Tiered Data Centers by the end of FY 2018.

Size & Scope of Agency Operations

Agency Size and Scope	FY 2015	FY 2016
Total Number of Employees as Reported in the President's Budget	108,400	111,304
Total Acres of Land Managed	2,213,452	2,209,142
Total Number of Buildings Owned	10,800	11,293
Total Number of Buildings Leased (GSA and Non-GSA Lease)	115	116
Total Building Gross Square Feet (GSF)	117,670,282	116,177,191
Operates in Number of Locations Throughout U.S.	47	47
Operates in Number of Locations Outside of U.S.	0	0
Total Number of Fleet Vehicles Owned	2,499	2,556
Total Number of Fleet Vehicles Leased	11,798	11,835
Total Number of Exempted-Fleet Vehicles (Tactical, Law Enforcement, Emergency, Etc.)	1,028	1,254
Total Amount Contracts Awarded as Reported in FPDS ($Millions)	25,117	28,238

Agency Progress and Strategies to Meet Federal Sustainability Goals

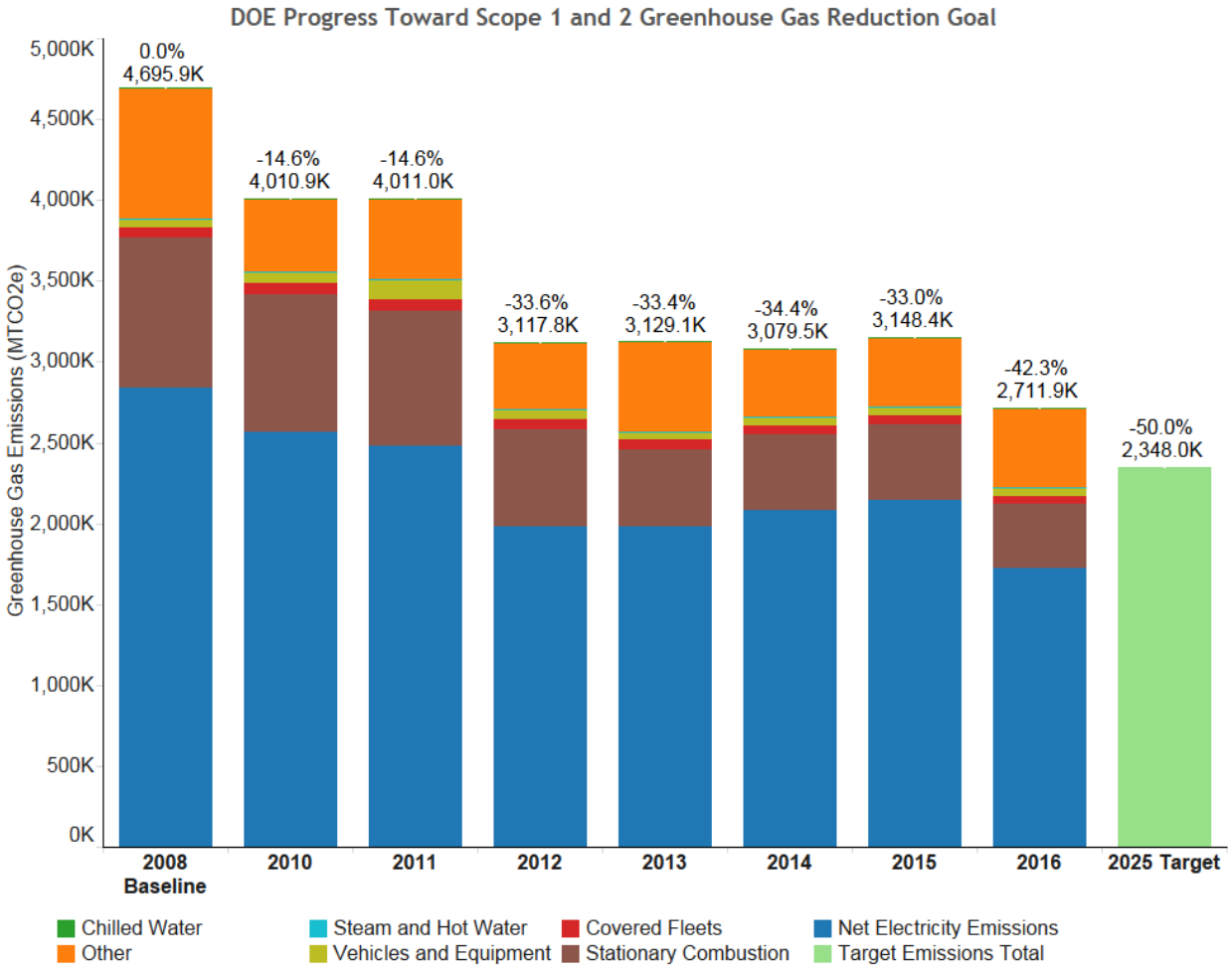
This section provides an overview of progress through FY 2016 as reported by agencies through the OMB Scorecard process on sustainability/energy goals and agency strategies to implement E.O.13693, *Planning for Federal Sustainability in the Next Decade*.

Goal 1: Greenhouse Gas (GHG) Reduction

Scope 1 & 2 GHG Reduction Goal

E.O. 13693 requires each agency to establish a Scope 1 & 2 GHG emissions reduction target to be achieved by FY 2025 compared to a 2008 baseline. The Department of Energy's 2025 Scope 1 & 2 GHG reduction target is 50%.

Chart: Progress toward Scope 1 & 2 GHG Reduction Goal



Scope 1 & 2 GHG Reduction Strategies for Fiscal Year 2018

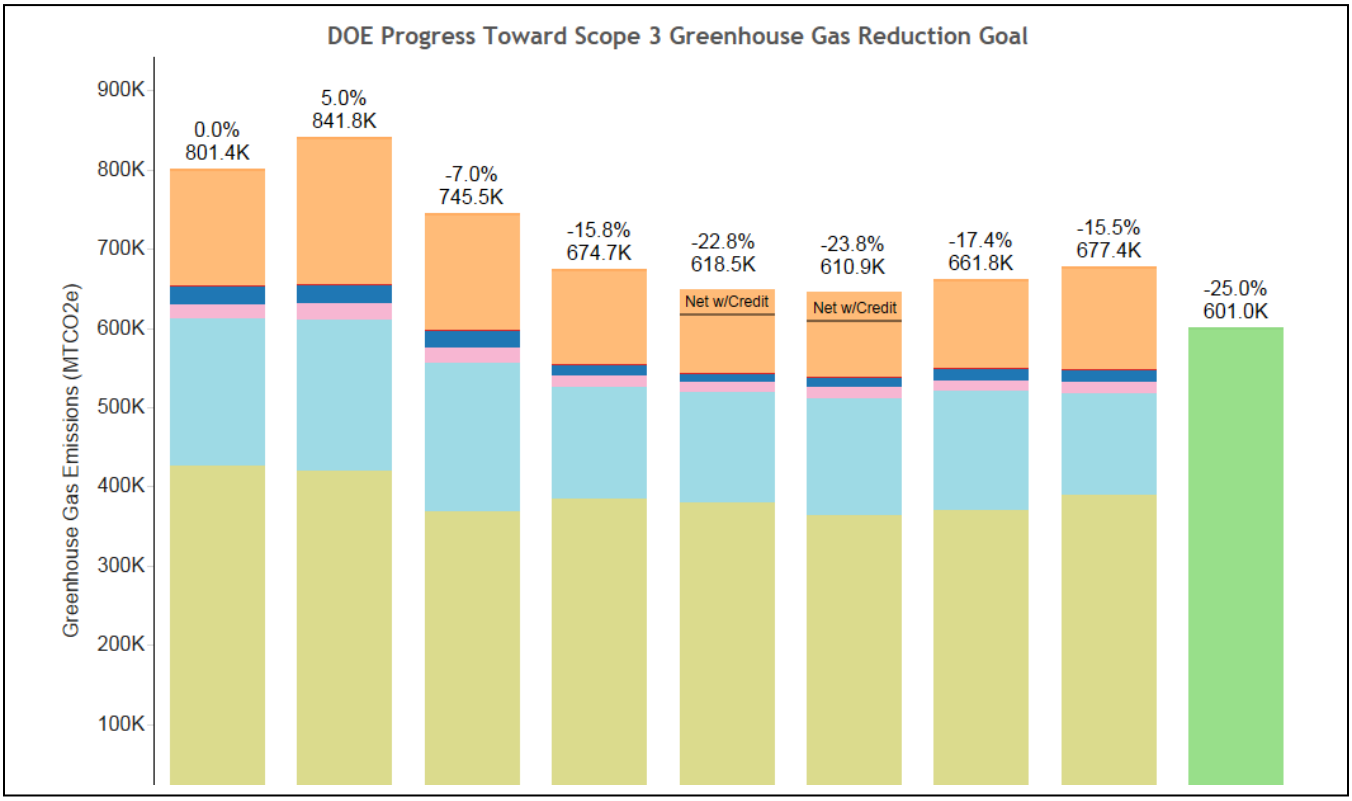
Strategy	Strategy Narrative	Targets and Metrics
Use the Federal Energy Management Program (FEMP) GHG emission report to identify/target high emission categories and implement specific actions to address high emission areas identified.	DOE utilizes the FEMP tool and internal analyses to identify areas for prioritization. In addition, DOE is continually improving an enterprise sustainability reporting tool to consolidate analyses, and provide for overarching strategy prioritization by programs and sites.	(1) Continue to utilize FEMP GHG emissions report for strategy prioritization. Work with Council of Environmental Quality (CEQ) and Office of Federal Sustainability to revise Federal GHG accounting and reporting guidelines. (2) Refine and continue to deploy internal analyses, including the sustainability reporting tool, to accompany FEMP tool.
Identify and support management practices or training programs that encourage employee engagement in addressing GHG reduction.	DOE develops and provides training on a broad range of sustainability topics. DOE staff regularly attends FEMP and other vendor training opportunities.	(1) In August 2017, DOE will hold comprehensive sustainability training as part of the Energy Exchange. (2) On a monthly basis, the SPO will disseminate internal and external sustainability training opportunities. For internal training opportunities, the SPO will ensure video teleconferencing (VTC) is available.
Employ operations and management (O&M) best practices for emission generating and energy consuming equipment.	DOE maintains working groups that reduce emissions, share operating experience, and share best practices. DOE evaluates the performance of working groups and strives to find areas where they can be streamlined, and explores new areas where efforts could be increased.	(1) Continue to share operational best practices through established DOE working groups. (2) Continue to evaluate established working groups to ensure they best meet the needs of DOE sites.

Strategy	Strategy Narrative	Targets and Metrics
Identify additional sources of data or analysis with the potential to support GHG reduction goals.	In September 2016, DOE launched an enterprise-wide online tool for collecting and managing Departmental sustainability data. This system provides streamlined analytics to DOE program and site personnel.	DOE will continue to improve and expand upon the capabilities of the sustainability online tool. In early 2017, DOE incorporated more content and analytical tools based on lessons learned from 2016 and will continue to look for creative ways to assess opportunities.

Scope 3 GHG Reduction Goal

E.O. 13693 requires each agency to establish a Scope 3 GHG emission reduction target to be achieved by FY 2025 compared to a 2008 baseline. DOE's 2025 Scope 3 GHG reduction target is 25 percent.

Chart: Progress toward Scope 3 GHG Reduction Goal



In FY 2016, DOE's Scope 3 GHG reduction was at 15.5 percent. Employee commuting is the largest contributor to DOE's Scope 3 emissions, accounting for 57.4 percent of the Department's total. DOE encourages the use of mass transit, carpooling, and vanpooling and also promotes teleworking, teleconferencing, and alternative work schedules. DOE is continuing its effort in evaluating barriers to

improve employee commuting and increase teleworking. The information will be used develop a strategy for making additional strides in these areas.

At various field locations, DOE installed 253 electric vehicle charging stations for both fleet and workplace reimbursable charging. For sites located in rural areas, DOE is encouraging bus and park-and-ride systems using the Idaho National Laboratory's (INL) model. INL operates the largest and most successful park-and-ride program of any Federal agency.

Transmission and distribution (T&D) losses are another contributor to DOE's Scope 3 GHG emissions. As the Department expands on-site renewable and clean energy generation at its sites, T&D loss emissions should decrease. However, mission-related activities are expected to increase at DOE sites, expanding the demand for energy and electricity with a probability of increased use of certain high-Global Warming Potential (GWP) gases. To counter these increases, DOE intends to continue performing site-level energy and fugitive emissions management assessments and will take appropriate actions based on the findings. DOE will also focus on implementing cost-effective conservation measures to maximize efficiency, including utilization of Energy Savings Performance Contracts (ESPC).

Scope 3 GHG Reduction Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Develop and deploy an employee commuter emissions reduction plan.	Commuting is the largest source of Scope 3 emissions at DOE. As such, DOE is targeting additional emissions reductions and expanding commuting options. Given DOE's geographically dispersed sites, applicability of commuting options will vary, creating a need to evaluate all options with a flexible sustainable commuting toolkit.	(1) Leverage and disseminate the newly created *Sustainable Commuting at U.S. Department of Energy National Laboratories: Report & Toolkit.* (2) Provide training webinars to sites on commuting options, as needed.

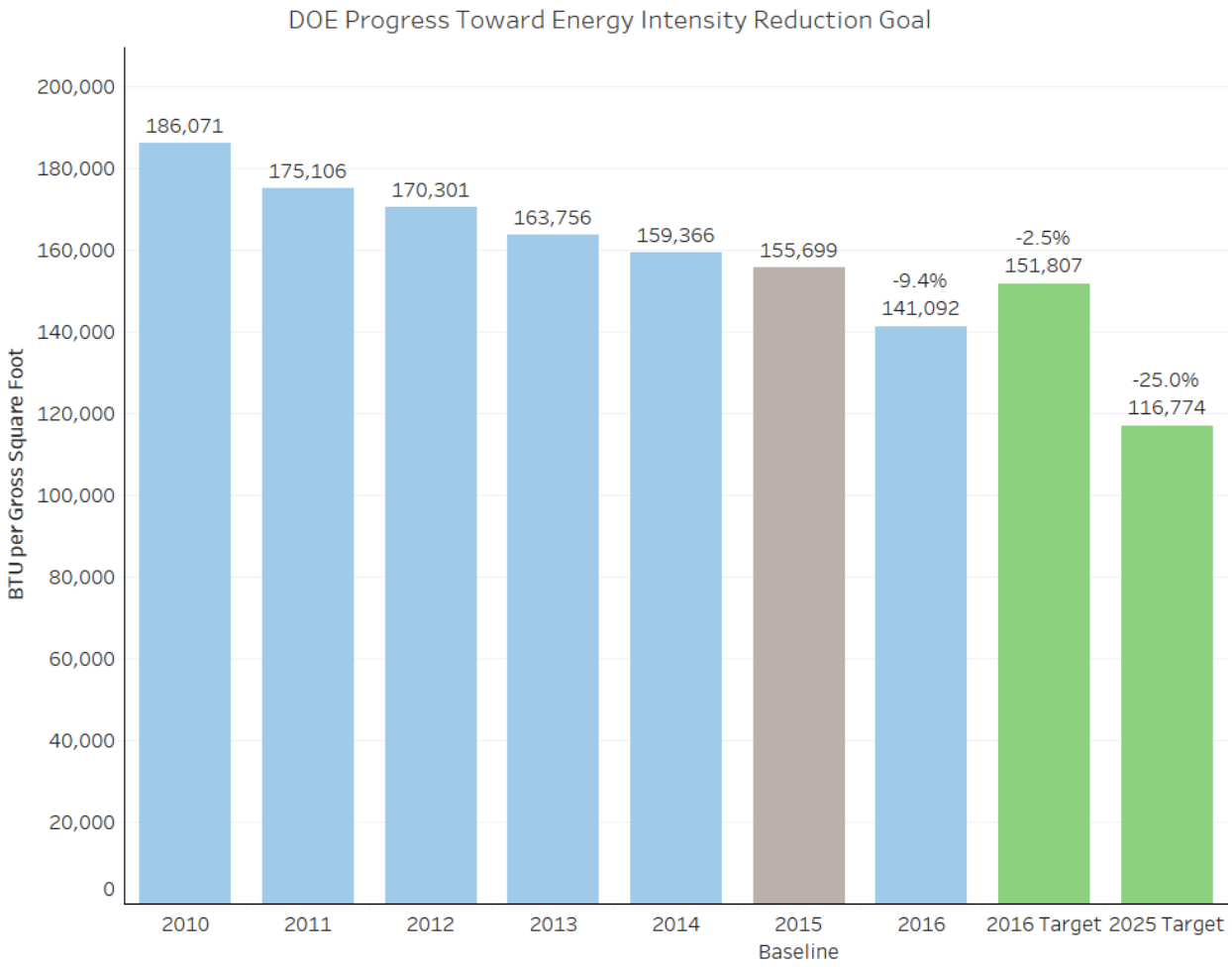
Strategy	Strategy Narrative	Targets and Metrics
Use an employee commuting survey to identify opportunities and strategies for reducing commuter emissions.	Sites provide commuting data as part of the annual reporting process. This data can be used to identify which commuting modes are being underutilized and with input from employees prioritize alternative emission reduction modes. Furthermore, the surveys are used to identify sites that have opportunities to improve data quality through various means including updating surveying methodologies, increasing data granularity collected, and replicating best practices across the DOE complex.	(1) Connect sites with well-developed surveys for peer-to-peer analysis of surveys and exchange of strategies for additional reduction methods. (2) Provide targeted assistance to update commuter surveys for FY 2017 annual reporting with a focus on sites that have the greatest opportunity for survey methodology updates.
Establish policies and programs to facilitate workplace charging for employee electric vehicles.	By December 2016, DOE had installed 253 electric vehicle charging stations available for workplace charging. Data gathered from the current charging infrastructure will determine opportunities for future charging stations infrastructure improvements and policies.	(1) Maximize use of existing charging station infrastructure. (2) Determine future policy updates and infrastructure improvements based on charging station use data. (3) Share electric vehicle charging best practices across the DOE complex.
Include requirements for building lessor disclosure of carbon emission or energy consumption data and report Scope 3GHG emissions for leases over 10,000 rentable square feet.	DOE will identify planned new leases over 10,000 rentable square feet and work with landlord(s) to ensure disclosure of utility usage. Based on reported utility usage, associated emissions will be estimated and reported.	(1) Updated from voluntary to required reporting for new leases. (2) Provide guidance documents to sites no later than August 2017.

Goal 2: Sustainable Buildings

Building Energy Conservation Goal

The Energy Independence and Security Act of 2007 (EISA) required each agency to reduce energy intensity 30% by FY 2015 as compared to FY 2003 baseline. Section 3(a) of E.O. 13693 requires agencies to promote building energy conservation, efficiency, and management and reduce building energy intensity by 2.5% annually through the end of FY 2025, relative to a FY 2015 baseline and taking into account agency progress to date, except where revised pursuant to Section 9(f) of E.O. 13693.

Chart: Progress toward Facility Energy Intensity Reduction Goal



DOE continues to strive to reduce energy intensity 25 percent by FY 2025, by reducing 2.5 percent each year, relative to a FY 2015 baseline of 155,699 Btu per square foot of building space. DOE continues to actively promote the use of sound energy management, cost-effective energy conservation measures, and building-level and data center metering to meet this goal.

DOE's recent progress in reducing energy intensity is principally attributable to the accounting method

outlined by CEQ whereby an agency may deduct from the numerator of the energy intensity equation those Btu consumed from onsite renewable energy systems for which an agency retains the associated renewable energy certificates (RECs). Beyond the credit achieved through onsite renewable energy projects, DOE is committed to energy reductions accomplished through energy conservation measures that have appreciable impacts in its facilities. One of DOE's initiatives is public-private partnerships with energy services companies to enter into Energy Savings Performance Contracts and similar financing vehicles to pursue high-impact capital improvements that save energy. DOE is also benchmarking its metered buildings, using ENERGY STAR Portfolio Manager to track energy use, and metering buildings and data centers to monitor facility energy use and strategically apply energy efficiency technologies and practices that save both energy and cost.

Building Energy Conservation Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Make energy efficiency investments in agency buildings.	1) Examine potential for deep retrofit ESPCs and other performance contracting instruments 2) Continue to implement, where life cycle cost effective, Efficiency & Conservation Measures (ECM) from comprehensive energy and water assessments and commissioning reports.	In FY 2018, DOE will award $125 million in ESPC/UESC investment value and will conduct facility audits and implement ECMs on a four-year cycle, per EISA Section 432.
Redesign interior space to reduce energy use through daylighting, space optimization, and sensors and control systems.	DOE will encourage its program offices and sites to undertake this strategy in appropriate spaces as mission and budget permit.	(1) Continue to use DOE standard of 180 Usable Square Feet (USF) of office space per person. (2) Plan for daylighting and sensors and control systems in future renovations to the extent practicable.
Install and monitor energy meters and sub-meters.	DOE will install energy meters and sub-meters following the timeline and pace specified in its metering plan.	DOE will install 50 new energy meters and sub-meters in FY 2018.
Collect and utilize building and facility energy use data to improve building energy management and performance.	DOE will continue to ensure that building level meters are installed on energy loads that are not principally driven by scientific and industrial applications	(1) In FY 2018, DOE will require sites to collect and use building and facility energy use data where feasible, and to report results in their annual Site Sustainability Plans. (2) DOE will provide sites with training and technical assistance.

Strategy	Strategy Narrative	Targets and Metrics
Ensure that monthly performance data is entered into the EPA ENERGY STAR Portfolio Manager.	DOE requires sites to enter monthly performance data into Portfolio Manager per EISA Section 432.	(1) DOE has benchmarked 1,003 buildings in Portfolio Manager for FY 2016 and continues to provide monthly data. (2) DOE plans to add an additional 50 buildings to Portfolio Manager by March 2018.

Building Efficiency, Performance, and Management Goal

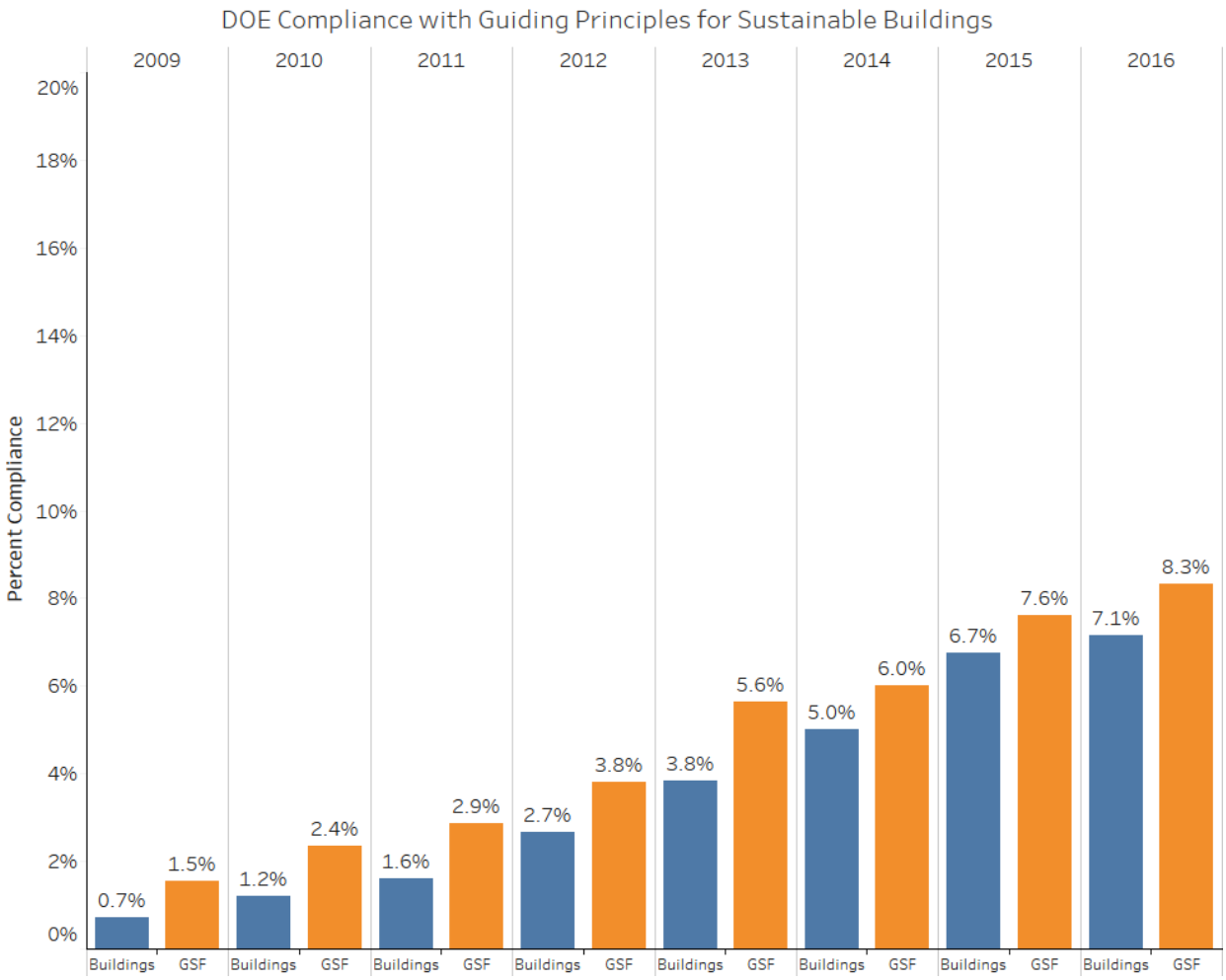
Section 3(h) of E.O. 13693 states that agencies will improve building efficiency, performance, and management and requires that agencies identify a percentage of the agency's existing buildings above 5,000 gross square feet intended to be energy, waste, or water net-zero buildings by FY 2025 and implement actions that will allow those buildings to meet that target. DOE's 2025 target is 1 percent of existing building stock over 5,000 gross square feet, or approximately 30 buildings, consisting of both new facilities and retrofits of existing facilities.

Guiding Principles for Sustainable Federal Buildings

Section 3(h) of E.O. 13693 also states that agencies will identify a percentage, by number or total GSF, of existing buildings above 5,000 GSF that will comply with the *Guiding Principles for Sustainable Federal Buildings (Guiding Principles)* by FY 2025.

DOE's FY 2025 target is 17% by building count.

Chart: Percentage of Buildings Meeting the Guiding Principles



The Department conducts its mission in a diverse portfolio of buildings. This portfolio of buildings spans unique scientific laboratories, accelerators, light sources, supercomputers, data centers, industrial facilities, as well as traditional office space environments.

Through FY 2016, 8.3 percent of the Department's building stock complied with the Guiding Principles for Sustainable Federal Buildings (Guiding Principles). DOE made significant progress over the past year to improve sustainable building performance. In FY 2016, DOE added 15 buildings to its green building portfolio, for a total of 189 Guiding Principles-compliant buildings. This represents more than a 9 percent increase in HPSB compliant facilities over FY 2015 performance. DOE set a target of 17 percent by building count complying with the Guiding Principles by 2025. DOE also plans to expand the design and implementation of net zero buildings. The FY 2025 target for net zero energy, waste, and/or water buildings is 1 percent of existing building stock over 5,000 gross square feet, or approximately 30 buildings, consisting of both new facilities and retrofits of existing facilities.

Sustainable Buildings Strategies for Fiscal Year 2018

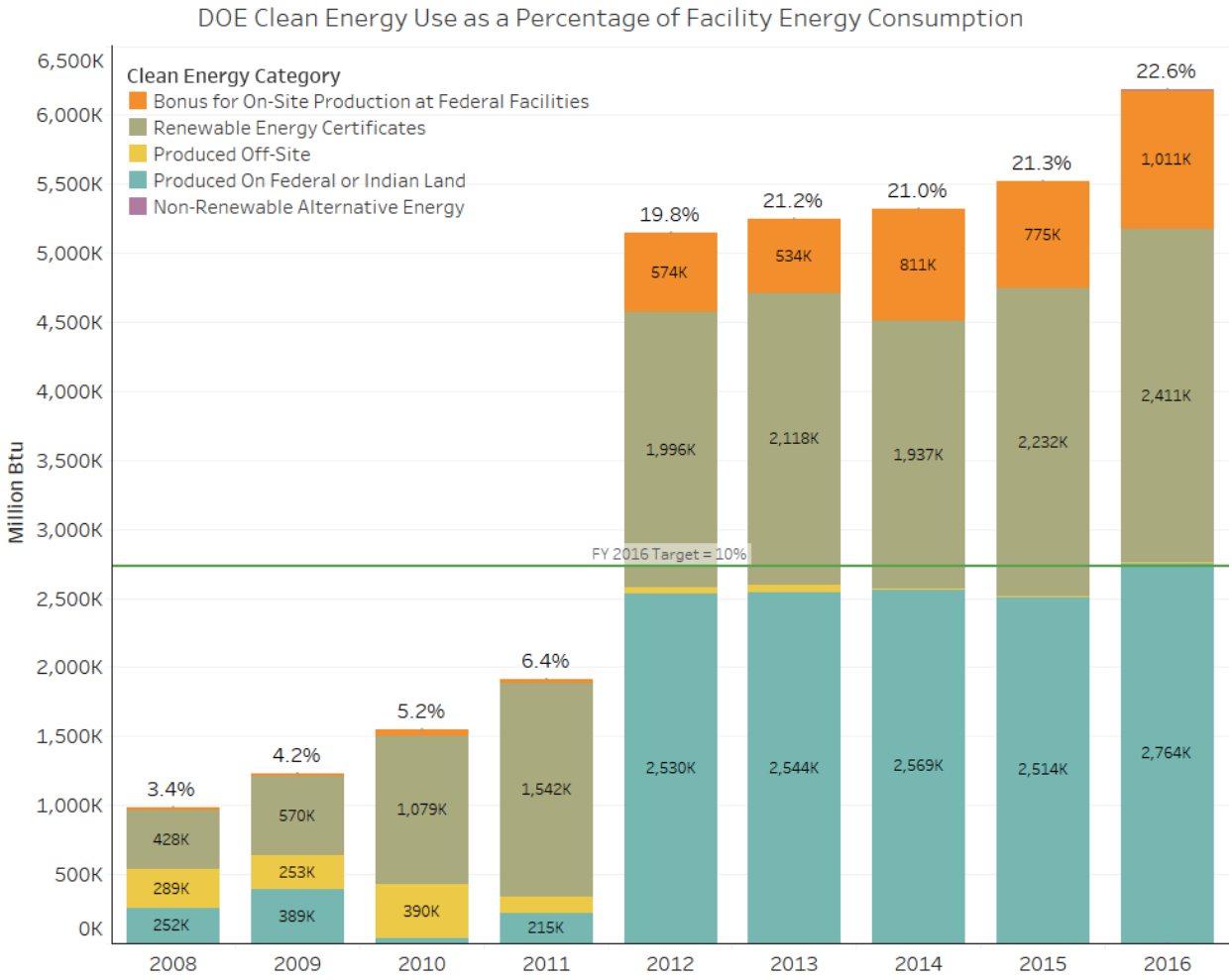
Strategy	Strategy Narrative	Targets and Metrics
Design and manage the operation, repair, and renovation of agency buildings in a manner that considers and responds to the projected impacts of increasing frequency of extreme weather events.	DOE's sustainability and program offices have and will continue to partner with the Office of Asset Management to refine DOE's ability to protect its facilities from extreme weather events that threaten DOE sites and facilities. In particular, DOE developed methodologies for conducting assessments across DOE sites that observe and document geographic and meteorological threats to facilities and infrastructure.	1) Assess weather and natural hazard risks to mission and operations, including past and projected precipitation levels, wind, temperatures, drought and flood. 2) Continually review risk determinations 3) Integrate risk assessments into site wide planning efforts. 4) Improve personnel capacity to implement effective response measures that secure facilities and ensure worker and public safety. 5) Develop or refine facility management and capital planning to consider extreme weather risk, especially emergency planning, natural hazard assessment and Continuity of Operations (COOP) Implementation Plan.
Ensure all new construction of Federal buildings greater than 5,000 GSF that enters the planning process be designed to achieve energy net-zero and, where feasible, water or waste net-zero by FY 2030.	DOE continues to assess available means of accomplishing this goal.	1 percent of existing building stock over 5,000 gross square feet, or approximately 30 buildings, consisting of both new facilities and retrofits of existing facilities by 2025.

Goal 3: Clean & Renewable Energy

Clean Energy Goal

E.O. 13693 Section 3(b) requires that, at a minimum, the percentage of an agency's total electric and thermal energy accounted for by clean energy (i.e., renewable and alternative energy) shall be not less than: 10% in FY 2016-17; 13% in FY 2018-19; 16% in FY 2020-21; 20% in FY 2022-23; and 25% by FY 2025.

Chart: Use of Clean Energy as a Percentage of Total Electric Energy and Thermal Energy

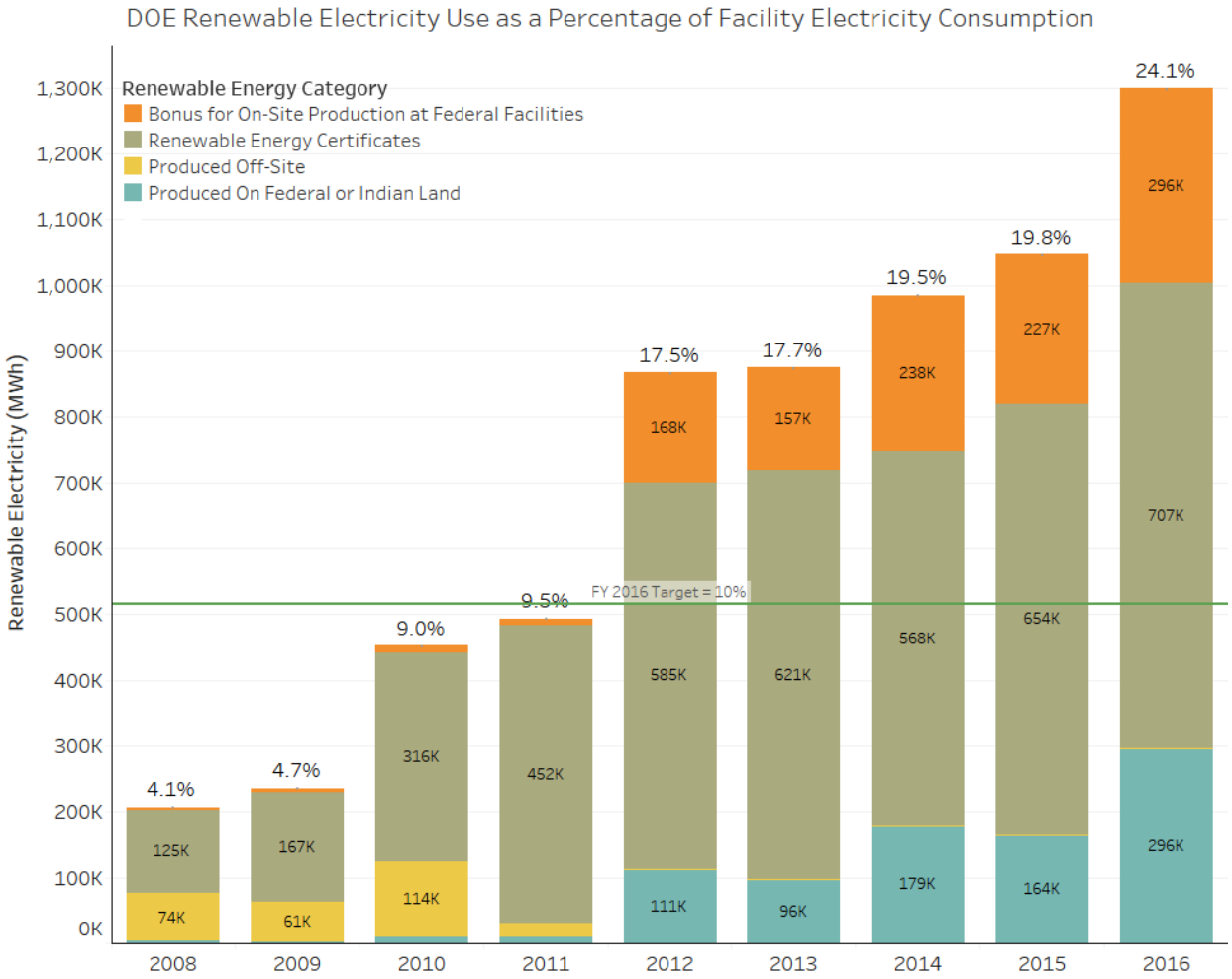


DOE's clean energy amounted to 22.6 percent of the total electric and thermal energy and exceeded the FY 2016 target of 10 percent.

Renewable Electric Energy Goal

E.O. 13693 Section 3(c) requires that renewable energy account for not less than 10% of total electric energy consumed by an agency in FY 2016-17; 15% in FY 2018-19; 20% in FY 2020-21; 25% in FY 2022-23; and 30% by 2025.

Chart: Use of Renewable Energy as a Percentage of Total Electric Energy



DOE significantly expanded on-site renewable energy generation across the complex. In FY 2016, DOE's renewable energy performance amounted to 24.1 percent of total electricity use. DOE's performance is attributed to developing on-site renewable energy projects, awarding renewable energy siting bonuses, and purchasing renewable energy credits. This progress places DOE on-track to meet E.O. 13693's goal of 30 percent by FY 2025. In addition to striving to meet the renewable electricity goal, DOE will implement clean energy technologies to meet the new 25 percent goal for building thermal and electric energy. DOE developed several large-scale on-site renewable energy projects, with many financed through performance-based energy contracts, including ESPCs.

The economic feasibility of large renewable energy systems continues to challenge DOE sites, as low-cost electricity extends payback periods to the point that they are no longer economical. However, DOE will continue to encourage the inclusion of on-site renewable generation into all new construction projects. This and DOE's policy on purchase preference for renewable energy from Indian tribes per the Department's authorities under the Energy Policy Act (EPAct) of 2005 will propel DOE toward the 30 percent target by FY 2025.

Clean and Renewable Energy Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Install agency-funded renewable on-site and retain corresponding renewable energy certificates (RECs).	Multiple DOE sites are in the process of evaluating opportunities to contract for the purchase of renewable energy, using the vehicle (ESPC, UESC, Power Purchasing Agreement (PPA), etc.) most appropriate for their region and site. Sites will work with renewable energy experts at FEMP and other offices/National Labs to ensure that appropriate RECs are held by the government.	DOE plans to increase the amount of renewable energy produced on Federal land from 296K MWh in FY 2016 to 305K MWh by FY 2018.
Purchase of energy that includes installation of renewable energy on-site at a federal facility or off-site from a federal facility.	DOE will continue to evaluate opportunities to contract for the purchase of renewable energy and ensure that appropriate RECs are held by the government.	DOE currently purchases almost no renewable energy from off-site producers; sites purchase Renewable Energy Certificates. DOE commits to investigating opportunities to increase its purchase of renewable energy from off-site installations.
Utilize the Renewable Energy Planning and Optimization (REopt) tool to prioritize and/or identify clean/renewable energy potential and projects that the agency can implement by FY 2020.	The National Renewable Energy Laboratory completed two phases of REopt screenings of 17-20 DOE sites in 2014 and 2016. Several sites are investigating further the opportunities identified in the most recent report.	DOE will, given available funding, complete additional REopt screenings in the future as the inputs become outdated. The current priority is to investigate implementation rather than identify opportunities.
Install on-site thermal renewable energy and retain corresponding renewable attributes or obtain equal value replacement RECs.	With the revised goal delineating clean energy from renewable electric energy, DOE sites have been actively looking into thermal renewable energy to help achieve the clean energy goal.	DOE plans to install three on-site thermal renewable energy by the end of FY 2018.
Install on-site combined heat and power processes.	DOE used ESPC to install a 6 MW combined heat and power plant. Construction was completed in FY 2016.	DOE plans to implement an additional large combined heat and power plant using ESPC. The project is scheduled for award in FY 2018.
Identify potential opportunities to utilize energy from small modular nuclear reactor technologies.	While not a major or widespread opportunity at DOE sites, at least one site is exploring the use of small modular nuclear reactor (SMR) technologies.	DOE will monitor progress at one site that is actively interested in pursuing SMR technologies and provide assistance, pending funding availability.

Goal 4: Water Use Efficiency & Management

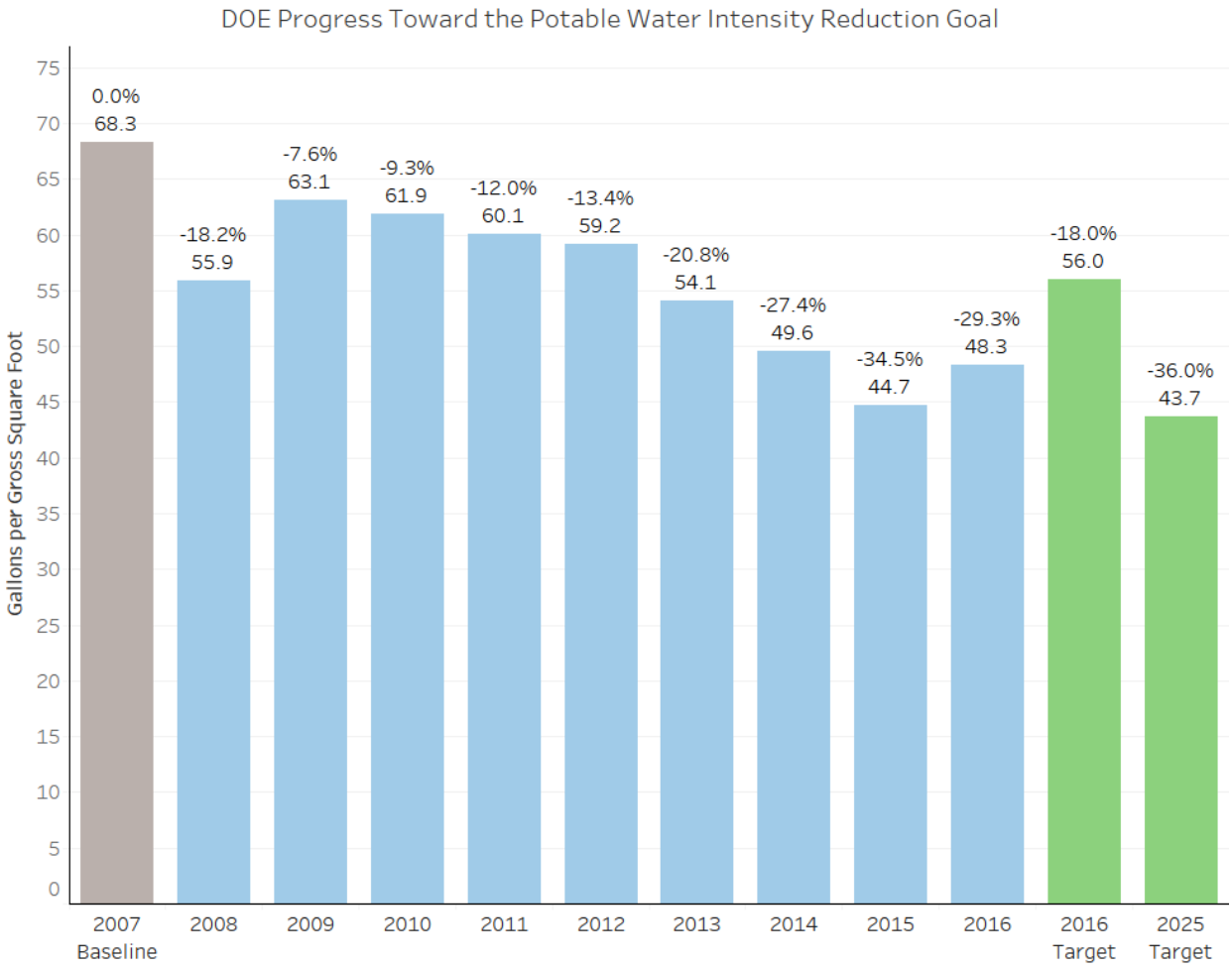
Potable Water Consumption Intensity Goal

E.O. 13693 Section 3(f) states that agencies must improve water use efficiency and management, including storm water management, and requires agencies to reduce potable water consumption intensity, measured in gallons per square foot, by 2% annually through FY 2025 relative to an FY 2007 baseline. A 36% reduction is required by FY 2025.

Industrial, Landscaping and Agricultural (ILA) Water Goal

E.O. 13693 section 3(f) also requires that agencies reduce ILA water consumption, measured in gallons, by 2% annually through FY 2025 relative to a FY 2010 baseline.

Chart: Progress toward the Potable Water Intensity Reduction Goal



Water is essential to the DOE mission, as industrial processes account for the majority of DOE's potable and non-potable water use. Many DOE sites use water for evaporative cooling towers, process heat removal, cooling accelerators, supercomputers, and data centers. The reliance on water-intensive mission-critical activities presents a unique challenge for DOE in meeting the E.O. 13693 water use reduction goals.

The Department is currently on-track to meet the goal of a 36 percent reduction in potable water use intensity by FY 2025. As of FY 2016, DOE reduced potable water intensity by 29.3 percent relative to the FY 2007 baseline, well exceeding the interim target of 18 percent. DOE's performance can be attributed to the efforts of several large water consuming sites that upgraded processes in FY 2015, although DOE continues to seek opportunities to reduce potable water consumption.

Cooling demand for supercomputers and scientific processes continues to make future progress difficult to predict. The Department will continue to employ proactive water management strategies and pursue alternative water options to reduce potable water use, including water reclamation and reuse. Several DOE sites are converting once-through cooling systems to closed-loop and reusing process water or gray water and/or storm water runoff.

DOE will work to maintain success over the next few years as water-intensive mission-related activities increase. In 2016, DOE prepared and disseminated to sites a Strategy Water Management Plan that analyzed sites' potential for achieving water consumption reductions, and provided an implementation plan to accomplish them. The Plan prioritized water measures that hold the highest potential to reduce DOE's overall water use. Analysis in the Plan concluded that the highest impact and most cost-efficient water conservation measure is reducing water use through operational changes and best management practices, followed by increasing water efficiency by retrofitting and replacing equipment and processes, and finally leveraging third party financing to implement capital projects through ESPCs and utility energy service contracts (UESCs). DOE disseminated the best practices in the Plan to DOE sites with the largest water-consuming end-uses and will be monitoring usage at these sites.

Water Use Efficiency & Management Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Utilize ESPC/UESCs to reduce water consumption and ensure all ESPC/UESCs consider water reduction strategies.	DOE will include water efficiency projects in all ESPCs and UESCs, as appropriate, which may include provisions that require U.S. Energy Service Companies to examine water efficiency and ensure contractor expertise.	DOE's internal trainings and guidelines will include water as an important factor in examining ESPC and UESC feasibility.
Install and monitor water meters and utilize data to advance water conservation and management.	DOE released a Strategic Water Management Plan in May 2016 that provides strategies on implementation of water efficient technologies and best management practices. DOE will promote the implementation of these technologies and best practices across the DOE inventory.	(1) Install 25 total water meters across the DOE complex by the end of FY 2018. (2) Update DOE Metering Plan by the end of FY 2018.

Strategy	Strategy Narrative	Targets and Metrics
Install high efficiency technologies, e.g. WaterSense fixtures.	DOE released a Strategic Water Management Plan in May 2016 that provides strategies on implementation of water efficient technologies and best management practices. DOE will promote the implementation of these technologies and best practices across the DOE inventory.	(1) Follow up on opportunities identified in DOE Strategic Water Management Plan on water efficient technologies and best practices. (2) Conduct follow-on webinar and training events.
Prepare and implement a water asset management plan to maintain desired level of service at lowest life cycle cost.	DOE released a Strategic Water Management Plan in May 2016 that examines common uses of water across the complex and strategies for reducing use.	(1) Follow up with sites on how to implement practices identified in Strategic Water Management Plan. (2) Conduct follow-on webinar and training events.
Minimize outdoor water use and use alternative water sources as much as possible.	DOE released a Strategic Water Management Plan in May 2016 that examines common uses of water across the complex and strategies for reducing use.	(1) Follow up with sites on how to implement practices identified in Strategic Water Management Plan. (2) Conduct follow-on webinar and training events.
Design and deploy water closed-loop, capture, recharge, and/or reclamation systems.	Outdoor irrigation water use represents a small percentage of water consumed. DOE will promote landscaping and irrigation best management practices to reduce outdoor irrigation. DOE will investigate the use of alternative water sources.	(1) Disseminate landscaping and irrigation best management practices to sites with irrigation use; prioritize these sites for alternative water projects. (2) Projects in progress at various DOE sites.
Install advanced meters to measure and monitor potable and ILA water use.	Approximately 22 percent of DOE's annual potable water consumption is due to once-through cooling processes. DOE will continue to pursue water savings through converting once-through cooling systems to closed loop and ways to recycle and reuse the cooling discharge water.	(1) Prioritize once-through cooling systems for conversion to closed loop; identify systems for reuse and recycling. (2) Disseminate DOE Strategic Water Management Plan; it includes single pass cooling best practices.
Assess the interconnections and dependencies of energy and water on agency operations, particularly climate change's effects on water which may impact energy use.	Webinars and additional training events will be available to DOE employees detailing DOE Strategic Water Management Plan findings concerning minimizing water use.	Conduct webinars and training events.
Install high efficiency technologies, e.g. WaterSense fixtures.	Many DOE sites are affected by severe drought conditions. DOE will leverage conservation efforts completed at these sites and regional/local practices to address drought management and integrate findings into the DOE Strategic Water Management Plan.	(1) Communicate findings and best practices in DOE Strategic Water Management Plan in areas with high drought risk. (2) Link regional planning efforts on water conservation to related sustainability goals.

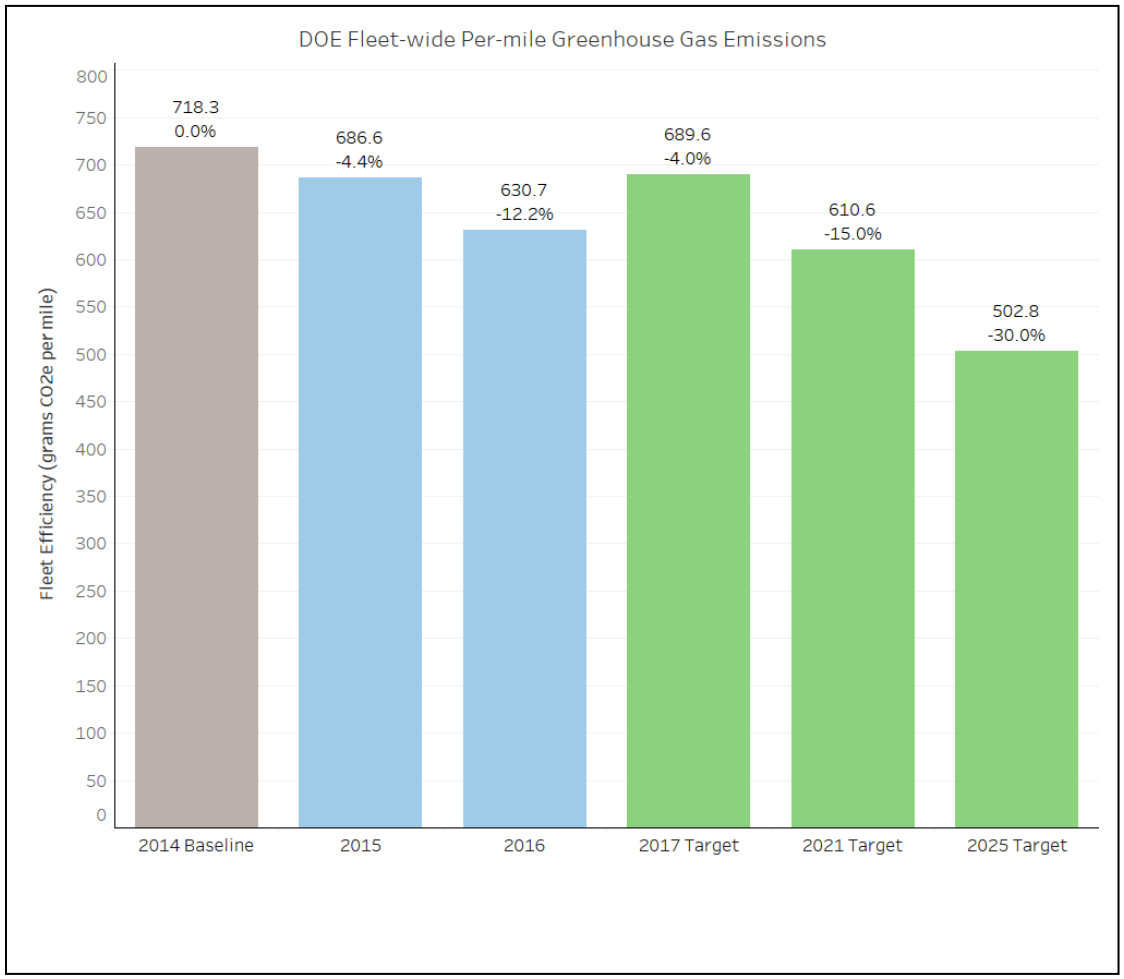
Goal 5: Fleet Management

Fleet Per-Mile Greenhouse Gas (GHG) Emissions Goal

E.O. 13693 Section 3(g) states that agencies with a fleet of at least 20 motor vehicles will improve fleet and vehicle efficiency and management. E.O. 13693 section 3(g)(ii) requires agencies to reduce fleet-wide per-mile GHG emissions from agency fleet vehicles relative to a FY 2014 baseline and sets new goals for percentage reductions: not less than 4% by FY 2017; not less than 15 % by FY 2020; and not less than 30% by FY 2025.

E.O. 13693 Section 3(g)(i) requires that agencies determine the optimum fleet inventory, emphasizing eliminating unnecessary or non-essential vehicles. The Fleet Management Plan and Vehicle Allocation Methodology (VAM) Report are included as appendices to this plan.

Chart: Fleet-wide Per-mile GHG Emissions



Petroleum Reduction

The EISA of 2007 requires that, by 2015, each agency reduce its fleet petroleum use by 20 percent compared to the FY 2005 baseline. DOE exceeded this requirement in FY 2015, and continued this trend again in FY 2016, by achieving a 30 percent petroleum use reduction.

Covered Petroleum Consumption in Gasoline Gallon Equivalent (GGE)

	Baseline FY 2005	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Gasoline		4,119,086	4,098,447	3,822,299	3,669,088	3,199,442	3,112,806	3,058,041
Diesel		2,485,402	2,401,253	2,396,065	1,914,847	2,254,624	1,797,633	1,469,457
B20		398,786	519,943	560,038	629,917	561,539	660,929	632,583
Total	**7,401,460**	**7,003,274**	**7,019,643**	**6,778,402**	**6,213,852**	**6,015,605**	**5,571,368**	**5,160,081**
Target		6,661,314	6,513,284	6,365,255	6,217,226	6,069,197	5,921,168	5,921,168
% Target Reduction		-10%	-12%	-14%	-16%	-18%	-20%	-20%
% Actual Reduction		**-5.4%**	**-5.2%**	**-8.4%**	**-16%**	**-18.7%**	**-24.7%**	**-30.3%**

Fleet Alternative Fuel Consumption Goal

EISA 2007 requires that, not later than October 1, 2015 and each year thereafter, that each Federal agency achieve a 10 percent increase in annual alternative fuel consumption, compared to a FY 2005 baseline. By FY 2016, agencies were to have increased alternative fuel use by 175.3 percent relative to FY 2005. In addition, OMB has asked all agencies to achieve a minimum of 5 percent alternative fuel use of their total fuel consumption.

In FY 2016, DOE's use of alternative fuel equaled 31.1 percent of total fuel use. DOE has increased its alternative fuel use by 183.3 percent since FY 2005.

Alternative Fuel Consumption in GGE

	Baseline FY 2005	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
CNG		37,070	15,887	23,681	18,216	14,432	12,675	2,410
LNG		0	0	0	0	3,080	6,659	4,110
LPG		0	0	0	0	0	0	0
E-85		1,498,738	1,423,559	1,320,327	1,409,824	1,593,408	1,461,183	1,584,155
Electric		826	164	508	569	736	264	302
B100		100,465	135,040	146,026	181,006	150,071	173,252	159,801
R100								18,937
Total	**624,704**	**1,637,099**	**1,574,650**	**1,490,562**	**1,609,615**	**1,761,727**	**1,654,033**	**1,769,715**
Target		1,006,092	1,106,701	1,217,371	1,339,108	1,473,019	1,620,321	687,174
% Target Increase		61.05%	77.16%	94.87%	114.35%	135.79%	159.37%	10%
% Actual Increase		**162.06%**	**152.06%**	**138.60%**	**157.66%**	**182.01%**	**164.77%**	**183.29%**

DOE is currently meeting or exceeding interim goal targets for petroleum use, alternative fuel use, and alternative fuel vehicle acquisition. The Department will continue to promote fleet management practices that increase the acquisition and use of alternative fuel vehicles and encourage practices to reduce petroleum consumption. Specifically, DOE will continue its efforts to reduce fleet-related GHG emissions by promoting vehicle right-sizing, fleet optimization, and the use of the alternative fuel locator tool.

DOE is currently focused on its heavy duty (HD) fleet, the single largest contributor to its fleet-wide GHG emissions. DOE is poised to start displacing up to 600,000 gallons of diesel and biodiesel (B-20) with HDRD/R-99 for HD vehicles at two sites and is under discussions with two additional sites to switch to this fuel. Renewable diesel (RD) is essentially any diesel fuel produced from a renewable feedstock that is predominantly hydrocarbon (not oxygenates) and meets the requirements for use in a diesel engine.

Fleet Management Strategies

Strategy	Strategy Narrative	Targets and Metrics
Collect and utilize agency fleet operational data through deployment of vehicle telematics.	DOE fleet sites will include costs for telematics in their FY 2017 and subsequent years budget projections. Sites will begin installation, and conduct trainings starting March 2017 and continuing through FY 2018.	In FY 2017, implement awarded GSA Multiple Award Schedules (MAS) contract for acquisition of telematics. Simultaneously, DOE will conduct webinars and training on telematics by the GSA telematics contractor. This project will continue through FY 2018.
Ensure that agency annual asset-level fleet data is properly and accurately accounted for in a formal Fleet Management Information System as well as submitted to the Federal Automotive Statistical Tool reporting database, the Federal Motor Vehicle Registration System, and the Fleet Sustainability Dashboard (FLEETDASH) system.	DOE will continue to update Federal Fleet Management System (FedFMS), Federal Motor Vehicle Registration System (FMVRS), and the FAST database to accurately reflect agency-wide data.	DOE will increase its Department-wide utilization of FLEETDASH by 15 percent by end of FY 2017.

Strategy	Strategy Narrative	Targets and Metrics
Issue agency policy and a plan to install appropriate charging or refueling infrastructure for zero emission or plug-in hybrid vehicles. Identify opportunities for ancillary services to support vehicle-to-grid technology.	DOE deployed Tiger Teams to various sites to assess optimal locations for EV charger (EVSE) installations. This resulted in the installation of 253 EVSE at various field sites. DOE will work with these sites to maximize use for fleet and workplace reimbursable recharging.	In FY 2017 and FY 2018 DOE will monitor use of the newly installed EVSE and will provide staff training materials to ensure maximum usage.
Increase utilization of alternative fuel in dual-fuel vehicles.	DOE will continue to explore use of alternative fuels, especially in our heavy duty (HD) fleet, the single largest contributor to DOE fleet-wide GHG emissions. DOE is poised to start displacing up to 600,000 gallons of diesel and B-20 with HDRD/R-99 for HD vehicles at two sites.	(1) In FY 2017, FEMP approved reporting of HDRD/R100 in FAST. R100 was used at two fleet sites in FY 2016, with 19,000 GGE reported. In FY 2017, two additional sites are evaluating R100 and plan to start using this fuel. (2) In FY 2017, DOE will evaluate the feasibility of R100, using the data from its pilot sites, and share the information with other optimal sites that operate a large number of HD vehicles.

Goal 6: Sustainable Acquisition

Sustainable Acquisition Goal

E.O. 13693 section 3(i) requires agencies to promote sustainable acquisition by ensuring that environmental performance and sustainability factors are considered to the maximum extent practicable for all applicable procurements in the planning, award and execution phases of acquisition.

Biobased Purchasing Targets

The Agricultural Act of 2014 (Public Law 113-79) amends Section 9002 (a)(2)(A)(i) of the Farm Security and Rural Investment Act of 2002 to establish a targeted biobased-only procurement requirement under which the procuring agency shall issue a certain number of biobased-only contracts when the procuring agency is purchasing products, or purchasing services that include the use of products, that are included in a biobased product category. Therefore agencies are to establish an annual target for increasing the number of contracts to be awarded with BioPreferred and biobased criteria and the dollar value of BioPreferred and biobased products to be delivered and reported under those contracts in the following fiscal year.

For FY 2018, DOE has established a target of 350 contracts and $55M in biobased products to be delivered.

Chart: Percent of Applicable Contracts Containing Sustainable Acquisition Requirements

# of Contracts Reviewed	Percentage Compliant
196	98.5%

Federal policy requires all agencies to purchase environmentally preferable products and services that use less energy and water, reduce or eliminate waste at the source, promote the use of nontoxic or less toxic substances, implement conservation techniques, and reuse materials rather than put them into the waste stream.

To further assist its sites, DOE has made several resources available to its purchasers. The Sustainable Acquisition Working Group (SAWG) bi-monthly meetings are held to help participants learn about the most up–to-date information covering sustainable acquisition. On average, there are more than 60 participants, representing DOE sites from coast to coast, who attend the SAWG. DOE sites have access to several resources including a mechanism to submit queries to other DOE sites and a product information sharing tool where sites can talk about their experience with specific products with one another. In FY 2016, DOE developed a web-based accredited two-hour training module on Federal sustainable acquisition. This training module is available to all agencies.

Lastly, to help purchasers effectively navigate sustainable acquisition requirements, DOE developed the GreenBuy Award Program which is based on a list of products with goals to embody leadership-level sustainability attributes. The Priority Products List is a compilation of product types, in eight categories, that depict products with the biggest environmental, social, and economic impact.

Under the GreenBuy Award Program, DOE sites receive recognition for purchasing programs that obtain sustainable products, save energy, conserve water, and reduce negative health and environmental impact.

The Priority Products list can be accessed on GSA's Green Procurement Compilation tool to facilitate the procurement of the products. This tool enables Federal purchasers to quickly identify the designated products and associated guidance to facilitate green purchasing decisions. In addition, the tool can also help with verifying sustainable attributes of a product.

The Priority Products list is based on evaluations of environmental performance standards, ecolabels, and input from DOE sites as well as external organizations.

Sustainable Acquisition Strategies for Fiscal Year 2018

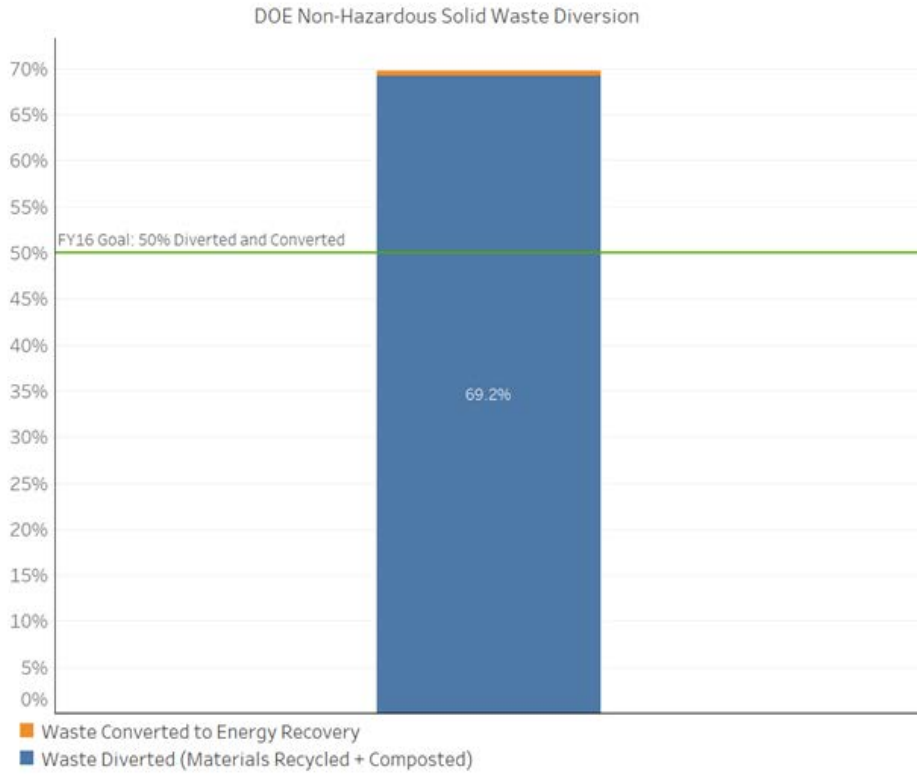
Strategy	Strategy Narrative	Targets and Metrics
Establish and implement policies to purchase environmentally preferable products and services that meet or exceed specifications, standards, or labels recommended by EPA.	DOE is a key partner with EPA and GSA in this effort.	1) The DOE GreenBuy Program is closely aligned with EPA's Interim Recommendations. DOE will continue to share relevant information on its Priority Products List with EPA and GSA. 2) EPA and GSA will provide input to the FY 2018 GreenBuy Award program and Priority Products List.
Reduce copier and printing paper use and acquiring uncoated printing and writing paper containing at least 30 percent postconsumer recycled content or higher.	Since 2010, DOE has met this requirement. DOE would like to challenge its sites to increase the amount of recycled content in its paper purchases. DOE will continue to work with its sites to reduce paper use, where possible, and optimize the use of recycled paper.	In FY 2018, DOE will ask for volunteers from its sites to purchase and use paper with 50 and 100 percent recycled content thought its GreenBuy Program. Those sites will then be asked to share their experience with their peers on the SAWG.
Improve quality of data and tracking of sustainable acquisition through the Federal Procurement Data System (FPDS).	DOE will provide FPDS training to contracting officers and purchasers to ensure higher quality data.	In FY 2017, DOE will continue to work with its acquisition professionals to ensure the proper coding and categorization particularly with Biopreferred purchases.
Identify opportunities to reduce supply chain emissions and incorporate criteria or contractor requirements into procurements.	DOE will work with five selected contracts that due for renewal in FY 2017 and FY 2018.	See Appendix: 2016 Procurement Plan to Reduce Supply Chain Greenhouse Gas Emissions.

Goal 7: Pollution Prevention & Waste Reduction

Pollution Prevention & Waste Reduction Goal

E.O. 13693 section 3(j) requires that Federal agencies advance waste prevention and pollution prevention and to annually divert at least 50% of non-hazardous construction and demolition debris. Section 3(j)(ii) further requires agencies to divert at least 50% of non-hazardous solid waste, including food and compostable material, and to pursue opportunities for net-zero waste or additional diversion.

As depicted in the figure below, the Department diverted nearly 70% of its non-hazardous solid waste in FY 2016 through the application of various waste recycling and recovery methods.



During FY 2016, many DOE sites took steps to improve and/or expand on robust pollution prevention and waste reduction programs. Many DOE sites met or exceeded the goal for non-hazardous solid waste diversion through the identification and implementation of opportunities to recycle and reuse a variety of waste streams, including (but not limited to): paper, cardboard, food and other compostable materials, aluminum cans, metals, electronics, batteries, wood pallets, lamps/bulbs, tires, and used oil.

For example, one DOE facility diverted 1,173 metric tons of non-hazardous solid waste by recycling or reusing cardboard, paper, furniture, wood pallets, ferrous and non-ferrous metals, aluminum cans, and other materials. Regulated solid waste such as aerosol cans, antifreeze, batteries, PCB waste oil, used engine oil, fluorescent light bulbs, lamps, and toner cartridges were also recycled. At a building on another site, municipal solid waste diversion increased from 66 percent to 81 percent in three months

through recycling, smart purchasing and composting. Source reduction activities also have been successfully implemented at a number of DOE sites.

The Department also continues to implement strategies and operations to increase the diversion of construction and demolition debris from landfill disposition. During FY 2016, the Department diverted 66 percent of its non-hazardous construction and demolition debris through the implementation of various recycling, recovery and reuse methods and strategies. One noteworthy site project involved the demolition of a cooling tower in preparation for a newer more efficient replacement. The old cooling tower (built in the 1960s) was constructed of wood and cement panels that contained asbestos. Demolition of the tower resulted in more than 192,000 pounds of demolition debris, 74 percent of which was recycled (with the asbestos-containing debris being disposed of in an approved disposal facility). Another example included the use of office roof tile shingles at a site being recycled into hot mix asphalt for constructing asphalt roads.

In addition, the Department continues to implement measures to minimize fugitive emissions of SF_6 and other potent GHGs and to evaluate potential opportunities for further fugitive emission reductions. During FY 2016, SF_6 emissions accounted for 80% of the Department's fugitive emissions total. Although the Department has achieved a 45 percent reduction in fugitive emissions in comparison to FY 2008 baseline data, SF_6 and other GHG emissions increased by 25 percent during FY 2016. This increase appears to reflect emissions from startup operations for new experimental equipment, increased demand for certain existing experimental systems, and increased emissions from certain Power Marketing Administrations. The Department will further assess the causes behind these increases during the coming year and pursue opportunities to further reduce emissions.

In addition to SF_6, DOE sites track emissions on a wide variety of other potent GHGs, including hydrofluorocarbons (HFC). DOE will continue to maintain its Fugitive Emissions Workgroup, which is comprised of representatives from Departmental elements that are significant users of fluorinated gases, to stay abreast of emerging issues and to share best practices and lessons learned.

Certain sites are using a combination of biological, cultural, mechanical and chemical methods to control weed infestation. Biological control methods are being used by releasing insect species that specifically target and damage noxious plant species to reduce infestations. Methods implemented at other sites have included (1) reseeding an area with native plant species that could outcompete the weeds, and (2) coordinating treatment efforts with adjacent landowners to ensure that all parties in the watershed are working together to control noxious weeds.

Pollution Prevention & Waste Reduction Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Report in accordance with the requirements of sections 301 through 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. 11001-11023).	DOE sites continue to independently report under EPCRA. Reporting under section 313 is tracked through EPA's Toxic Release Inventory (TRI) web-based reporting program (TRI-MEweb). Reporting under Sections 304, 311, and 312 is to local and state emergency planning authorities. The Department conducts a bi-monthly EPCRA Focus Group meeting to share information on EPCRA, including chemical inventory, threshold determinations, and tracking/reporting methods.	Continue site-level reporting under EPCRA. Continue site-level reporting of TRI chemicals, accidental chemical releases, and hazardous chemical storage. Share lessons learned and best practices for EPCRA compliance and reporting programs at DOE sites during bi-monthly EPCRA Focus Group meeting.
Reduce or minimize the quantity of toxic and hazardous chemicals acquired, used, or disposed of, particularly where such reduction will assist the agency in pursuing agency greenhouse gas reduction targets.	DOE sites use chemical management systems to provide supply-chain efficiency, establish tighter control of chemical purchases and identify greener alternatives. These systems assist with chemical inventory reduction by tracking expired and excess chemicals.	Track acquisition and use of hazardous materials at the site-level. Promote the use of alternative and less toxic materials, whenever possible.

Strategy	Strategy Narrative	Targets and Metrics
Eliminate, reduce, or recover refrigerants and other fugitive emissions.	SF_6 is used for a variety of purposes at DOE sites and represents 80 percent of all DOE fugitive GHG emissions. DOE tracks usage at the site-level and strives to reduce use and limit accidental releases, where possible. DOE will look for opportunities to further reduce fugitive emissions, and to consider the potential application of alternative products where feasible. DOE will continue to share best practices during the Fugitive Emissions Workgroup to improve fugitive emissions management.	Study existing programs and implemented measures (including SF_6 recovery systems), and share lessons learned among applicable DOE sites. Promote fugitive emissions management best practices through established DOE Fugitive Emissions Workgroup. Identify and evaluate potential alternatives to replace refrigerants and other high global warming potential substances. Promote cross-laboratory collaboration on gas management techniques and potential use of alternative substances in DOE applications. Develop and implement GHG management and emissions control plans, as appropriate.
Reduce waste generation through elimination, source reduction, and recycling.	In FY 2016, DOE diverted nearly 70 percent of nonhazardous solid waste from landfills. Implementation of additional waste management initiatives including composting and net-zero waste programs, and expanded recycling programs have contributed to the increased percentage of diverted nonhazardous solid waste.	Continue to increase waste diversion rate. Share lessons learned and best practices from successful and innovative recycling programs and net-zero waste programs at DOE sites. Assess existing strategies and continue planning and implementation to achieve E.O. 13693 net-zero waste goal.

Strategy	Strategy Narrative	Targets and Metrics
Implement integrated pest management and improved landscape management practices to reduce and eliminate the use of toxic and hazardous chemicals and materials.	DOE sites have pest management programs and include the use of pest management professionals and/or 3rd party vendors who have integrated pest management practices. They also implement appropriate landscape management practices.	Implement pest and landscape management practices to support pollinator and migratory bird protection objectives, where applicable.

Goal 8: Energy Performance Contracts

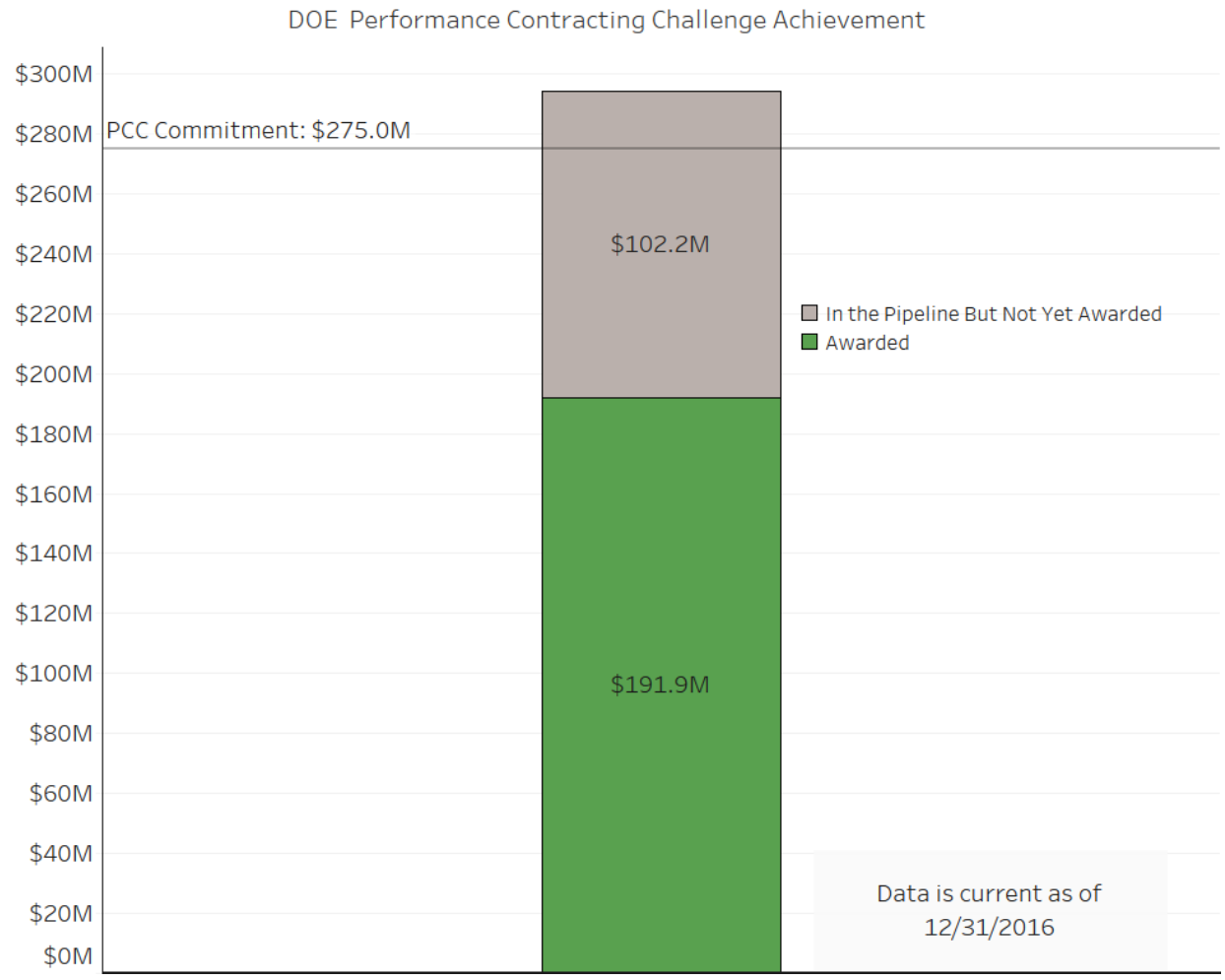
Performance Contracting Goal

E.O. 13693 section 3(k) requires that agencies implement performance contracts for Federal buildings. E.O. 13693 section 3(k)(iii) also requires that agencies provide annual agency targets for performance contracting. The Department of Energy's targets for the next two fiscal years are:

FY 2018: $ 125 million
FY 2019: $ 150 million

DOE set ambitious targets in the upcoming fiscal years. The Department is examining opportunities to leverage private capital to reduce deferred maintenance, save money, and upgrade equipment using performance-based contracts. This initiative is bringing together experts from across the agency and the private sector to assist. In order to facilitate this, DOE is leveraging the use of ESPC and UESC tools.

Chart: Progress toward Target under the 2016 Performance Contracting Challenge[1]



Performance Contracting Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Utilize performance contracting and incorporate use of ESPCs and UESCs into planning activities to meet identified energy & water efficiency and Administration objectives while deploying life-cycle cost effective infrastructure projects, with clean energy technology, energy and water & other savings measures.	DOE has used ESPCs since 1999, and searches for opportunities to implement ESPCs and UESCs. Performance contracting is a top priority for DOE in meeting its sustainability goals.	DOE commits to a target of $125 million in project investment value in ESPC and UESC awards for FY 2018 and $150 million in FY 2019.
Evaluate the top 25% of agency's most energy intensive buildings for opportunities to implement comprehensive ESPC/UESC projects.	DOE guidance on EISA Section 432 directs sites to prioritize covered facility selection by energy-intensity. All covered facilities are evaluated on a four-year cycle.	Facility evaluations will be conducted in accordance with the EISA Section 432 audit cycle and will be reported in EISA Section 432 Compliance Tracking System (CTS).

[1] This is the only chart that includes progress through 12/31/2016 versus FY 2016 performance.

Strategy	Strategy Narrative	Targets and Metrics
Prioritize top ten portfolio-wide projects which will provide greatest savings potential.	DOE has several data sources for the identification of potential projects, including CTS and internal resources.	By the end of FY 2017, DOE will prioritize the projects using the results of the internal renewable energy scoping study and EISA Section 432/CTS reporting process.
Submit proposals for technical or financial assistance to FEMP and/or use FEMP resources to improve performance contracting program.	FEMP works closely with the SPO and the DOE community. The FIRM initiative involves FEMP experts, who attend and speak at agency charrettes and support trainings and provide one-on-one technical support.	With FEMP's help, DOE is in the process of issuing two new ESPC Notices of Opportunity by the end of FY 2017.
Ensure agency legal and procurement staff are trained to use performance contracts effectively.	DOE will bring together contracting and procurement staff in a series of web trainings.	Two charrettes and two web trainings will be held before the end of FY 2017, and contracting officers and staff will be in attendance.

Goal 9: Electronics Stewardship & Data Centers

Electronics Stewardship Goals

E.O. 13693 Section 3(l) requires that agencies promote electronics stewardship, including procurement preference for environmentally sustainable electronic products; establishing and implementing policies to enable power management, duplex printing, and other energy efficient or environmentally sustainable features on all eligible agency electronic products; and employing environmentally sound practices with respect to the agency's disposition of all agency excess or surplus electronic products.

Agency Progress in Meeting Electronics Stewardship Goals

EPEAT	POWER MANAGEMENT	DISPOSITION
94.1%	98.0%	100.0%*
Percentage of monitors, PCs and laptops acquired by the agency that meet EPEAT-registry standards	Percentage of monitors, PCs and laptops with power management-enabled	Percentage of agency electronics disposed of using environmentally sound methods[1,2]

**Agency Targets: 100% for all three categories. Green shading indicates achievement of 95% target for EPEAT and 100% target for Power Management and Disposition. Yellow indicates greater than 90% achievement, and red indicates less than 90%. See more information about data sources in the Implementing Instructions, page 64.*

[1]*Disposition: Percentage based on agency Annual Executive Agency Reports on Excess and Exchange/Sale Personal Property (FMR B-27).*

[2] *Environmentally sound methods include: reuse through transfer, donation, and sales; and recycling through certified recyclers and manufacturer take-back programs using certified recyclers.*

DOE continues to meet goals for purchasing electronics consistent with EPA Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing. DOE improved power management on all eligible electronics from 93 percent of eligible equipment to 98 percent between FY 2015 and FY 2016. To ensure sound disposition of all agency excess and surplus electronics, DOE successfully

transitioned three sites from non-certified electronics recyclers to certified electronics recyclers in FY 2016. Sustainability and Office of the Chief Information Officer (OCIO) counterparts are now working together to ensure a seamless transition of electronics stewardship reporting through integrated data collection (IDC). This will improve tracking and reporting systems for electronics stewardship requirements throughout lifecycle.

Data Center Optimization Goal

E.O. 13693 Section 3(a) states that agencies must improve data center efficiency at agency facilities, and requires that agencies establish a PUE target in the range of 1.2-1.4 for new data centers and less than 1.5 for existing data centers.

The Department is on track to meeting the 1.5 PUE goal by the end of FY 2018. The average PUE for all metered, tiered, agency owned, and enduring data centers has improved from 1.7 in FY 2016, to 1.6 in FY 2017 to date.

A critical element in improving the Department's data center efficiency is the installation of power and infrastructure metering systems. This will allow Departmental Elements to accurately report energy consumption within their data centers to support energy improvement projects (including consolidation and cloud migration efforts). To address this metering need, the CIO has authorized an enterprise deployment of a Data Center Infrastructure Management (DCIM) system that will address shortfalls in data center metering, standardize performance reporting, and reduce overall metering costs by leveraging enterprise scale purchasing savings.

Documented below is the 2017 DOE Data Center Optimization Initiative (DCOI) Strategic Plan. This plan documents the Department's progress in meeting OMB target goals for seven key performance categories.

DCOI Metrics 2017 Strategic Plan		Target Goals	FY16		FY17		FY18		Explanation for Unmet Planned Value
			Planned	DOE Actuals	Planned	Actuals	Planned	Actuals	
Facility Utilization		≥ 80%	42%	42%	55%	40%	80%		FY17 Targets on Schedule
Energy Metering		100%	64%	64%	75%	69%	100%		FY17 Targets on Schedule
PUE		≤ 1.5	1.7	1.7	1.6	1.6	1.5		FY17 Targets Met
Virtualization		≥ 4	2.3	2.3	3.0	3.2	4.0		FY17 Targets Exceeded
Server Automated Monitoring	Tiered	≥ 65%	3%	3%	15%	5%	65%		FY17 Targets on Schedule
	Non-Tiered	≥ 65%	7%	7%	15%	6%	65%		FY17 Targets on Schedule
Closures	Tiered	0	0	0	0	4	0		FY17 Targets Exceeded
	Non-Tiered	25	2	2	6	12	25		FY17 Targets Exceeded
Cost Savings / Avoidance		0	0	$1,067K	0	$781.4K	0		FY17 Targets Exceeded
Cost of Closures		A reported $365K for cost of closures was reported in the latest inventory update							
Cost of Optimization		No reported optimization expenses (costs) were reported in the latest inventory update							
Historical Cost Savings		Energy has captured the following historical cost savings/avoidance: 2010-2012 - $10,578K; 2013 - $3,158K; 2014 – $1,371K; and 2015 – $2,064K							

Note: the DOE DCOI 2017 Strategic Plan documents progress in meeting OMB DCOI Goals and is updated once a year. The table above reflects the latest update dated April 17, 2017.

Electronics Stewardship Strategies for Fiscal Year 2018

Strategy	Strategy Narrative	Targets and Metrics
Purchase electronics consistent with EPA Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing.	Continue to address challenges, both within and outside the Department, in identifying and acquiring EPEAT-registered televisions and imaging equipment. Prepare sites to identify and acquire EPEAT-registered mobile devices and servers, as these products are registered in 2017 and 2018.	DOE continues to meet acquisition goals for computers and displays. By October 2017, provide training to sites to improve identification and purchase of compliant imaging equipment. Work with the EPEAT program throughout 2017 to address the lack of availability of compliant televisions. By October 2017, provide training and assistance to sites to identify and acquire EPEAT-registered mobile devices. Training will also be provided for servers, if those products become available.
Enable and maintain power management on all eligible electronics; measure and report compliance.	Continue to provide sites with targeted technical assistance to fully enable power management. Maintain power management reporting through Departmental Dashboard. Report metrics through Integrated Data Collection (IDC).	DOE improved power management from 93% of eligible equipment to 98% between FY 2015 and FY 2016. By October 2017, 100% of eligible equipment will be power managed.
Implement automatic duplexing and other print management features on all eligible agency computers and imaging equipment; measure and report compliance.	Specify the Program Offices and sites that need to develop Print Management Plans, consistent with DOE Guide 436.1-1, *Federal Sustainable Print Management*, and track the sites' progress in developing plans.	By October 2017, identify Program Offices and sites. By January 2018, provide training on the print management guide and plan templates. By October 2018, 50 percent of specified Program Offices and sites will issue Print Management Plans.

Strategy	Strategy Narrative	Targets and Metrics
Ensure environmentally sound disposition of all agency excess and surplus electronics, consistent with Federal policies on recycling & disposal of electronic assets, and measure and report compliance.	Continue to provide sites with targeted technical assistance to transition them to certified recyclers. Maintain end-of-life disposition reporting through Departmental Dashboard. Report metrics as appropriate.	DOE successfully transitioned three sites from non-certified electronics recyclers to certified electronics recyclers in FY 2016. By June 2017, provide targeted technical assistance for two non-compliant sites identified in 2016. By October 2017, transition these two sites to certified recyclers.
Work with CIO counterparts to improve tracking and reporting systems for electronics stewardship requirements throughout lifecycle.	Facilitate transition and maintenance of electronics purchasing and power management reporting to the CIO through the IDC process.	Sustainability and OCIO personnel have already started working together to ensure a seamless transition of electronics stewardship reporting through IDC. Electronics stewardship metrics will continue to be tracked using a Departmental Dashboard, maintained by sustainability staff and utilized by OCIO staff, in 2017.

Data Center Optimization Strategies for Fiscal Year 2018

The Department's Data Center Optimization Strategies are tied to the performance goals defined in the August 1, 2016 OMB Memorandum M-16-19 *(Data Center Optimization Initiative)* and reported in the Departments DCOI Strategic Plans.

Strategy	Strategy Narrative	Targets and Metrics
Facility Utilization	The objective of this Strategy is to reduce unused rack space in a data center. Data centers with a large amount of "free" space should look to reduce the data center size or relocate the data center racks to a consolidation site or cloud services.	The definition used in this metric is: Portion of total gross floor area in tiered data centers that is actively utilized for racks that contain IT equipment. OMB EOF FY 2018 Target: ≥ 80% DOE FY 2017 Target: 55% DOE Status – FY 2017: On track to meet FY 2017 Target numbers.

Strategy	Strategy Narrative	Targets and Metrics
Energy Metering	In order to understand the energy profile of a data center, it is necessary to install and monitor energy meters that can measure energy consumption of the data center infrastructure systems and the hosted IT systems. This metric tracks the number of data centers (based on total SF) that have energy metering systems installed.	The definition used in this metric is: Percent of total gross floor area (GFA) located in data centers that have power metering. OMB EOF FY 2018 Target: 100% DOE FY 2017 Target: 75% DOE Status - FY 2017: On track to meet FY 2017 Target numbers.
PUE	Data center infrastructure systems (cooling, power distribution, lighting systems, etc.) consume a direct ratio of energy to the IT systems the data centers support. The lower this ratio is the more efficient the data center is considered.	The definition used in this metric is: Proportion of total data center energy used by IT equipment. OMB EOF FY 2018 Target: ≤ 1.5 DOE FY 2017 Target: 1.6 DOE Status - FY 2017: On track to meet FY 2017 Target number.
Virtualization	With increased processing power of physical servers and improvements in virtualization systems, data centers can improve the overall density of service offering by consolidating servers. The Virtualization metric measures the ratio of virtual servers (OSs) to physical servers. Implementing a DCIM system addresses the measurement and management requirements and support later consolidation efforts.	The definition used in this metric is: Ratio of operating systems (OS) to physical servers. OMB EOF FY 2018 Target: ≥ 4.0 DOE FY 2017 Target: 3.0 DOE Status - FY 2017: Exceeds FY 2017 Target number.