

Department of Defense

2018 Sustainability Report and Implementation Plan

Executive Summary

The mission of the Department of Defense (DoD) is to provide the military forces needed to deter war and protect the security of our country. To successfully execute the DoD mission, our Military Departments must have the energy, land, air, and water resources necessary to train and operate, today and in the future. The DoD is focused on the lines of effort described in the National Defense Strategy:

- First, rebuilding military readiness as we build a more lethal Joint Force;
- Second, strengthening alliances as we attract new partners; and
- Third, reforming the Department's business practices for greater performance and affordability.

Therefore, the DoD seeks opportunities based on data that presents the most compelling case in terms of mission assurance, mission readiness, and cost-effectiveness. This DoD Sustainability Report and Implementation Plan describes ways the DoD is advancing its mission through resilient infrastructure and business practices that improve performance and affordability. Several of our highlights include the following:

Facility Energy Efficiency.

The DoD uses fixed price, performance-based contracting for energy resilience and energy efficiency as a cost-effective tool for reducing its energy consumption where such contracts enhance DoD installation readiness, mission assurance, and ultimately DoD's warfighting capability. In addition, the DoD also uses appropriated funding through programs, such as military construction (MILCON), the Energy Resilience and Conservation Investment Program (ERCIP), and Facilities Sustainment, Restoration and Modernization (FSRM), to implement energy resilience and energy security measures. DoD continues to analyze Military Services and DoD agencies' data for projects to ensure DoD is effectively and efficiently implementing projects that maximize benefit to mission readiness and assurance. When possible, data is used to inform leaders, building operators, and building occupants for increased situational awareness of the need for energy conservation and energy efficiency practices. Since the baseline year of FY 2003, the DoD has reduced energy intensity (Btu/GSF) by 21.8% as of FY 2017.

Renewable Energy. DoD continues to evaluate the best technical and operational solutions, which may include forms of renewable energy. The Department pursues renewable energy to enhance energy security and mission assurance when the business case supports it.

Water Use Efficiency and Management. The Department continues to maximize the efficient use of water resources, recognizing that this is a critical component of mission success. The capture and reuse of water is a standard practice across the Department, and we use guidance such as the Unified Facilities Criteria on Landscape Architecture as a means to ensure best practices across the enterprise. DoD facilities continue to reduce their potable water intensity through a suite of proven measures that are cost effective, including: implementing improvements identified in facility evaluations; reclaiming, recycling, and reusing water; landscaping with vegetation having low water requirements; leak detection and repair; installing high-efficiency plumbing fixtures; and installing and monitoring water meters.

Sustainable Buildings. DoD's large inventory of nearly 46,000 eligible buildings, of which few are new or renovated, means DoD continues to make relatively small annual improvements. The Department pursues internal metrics for sustainable buildings that better reflect the incorporation of sustainable features in buildings where improvements only partially meet the Guiding Principles for Sustainable Federal Buildings (hereafter referred to as the Guiding Principles).

Waste Management and Diversion. DoD approaches waste management and diversion within the context of compliance with statutory requirements, as well as to improve performance and affordability.

Department of Defense 2018 Sustainability Report and Implementation Plan

The Department continues to use innovative recycling and reuse tactics in order to reduce both procurement and disposal costs.

Sustainable Acquisition. DoD continues to operate its Sustainable Product Demonstration Program, which is designed to increase mission capability, reduce harm to the DoD workforce, reduce life-cycle costs, and help ensure availability of critical products. The total value of DoD's approximately 38,000 applicable Federal Procurement Data System (FPDS) contract actions containing sustainable actions in FY 2017 exceeded \$13,800 million (M), an increase of 10.1% compared to the previous year.

In summary, the Department's sustainability efforts focus on increasing readiness, supporting alliances, and improving affordability. The Department continues to maximize the efficient use of mission-critical resources such as water and energy, and ensure availability of chemicals and materials that have strategic importance to the Department now and into the future. By strategically planning and investing to protect our people, built infrastructure, and warfighting equipment, DoD ensures ample preparation to combat future threats.

**Department of Defense
2018 Sustainability Report and Implementation Plan**

Implementation Summary

1. Facility Management:

FACILITY ENERGY EFFICIENCY

FY 2017 Status: 21.8% reduction (Btu/GSF) compared to baseline FY 2003; 6% reduction from FY 2015

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
DoD is focused on implementing energy resilience and energy security in support of advancing mission readiness and assurance. DoD incorporates this mindset into its policies and guidance for Military Services and DoD agencies to reference as they develop and implement energy solutions at their installations. While energy efficiency is an important part of gaining energy security, DoD does not have specific energy efficiency goals.	DoD continuously updates strategies in its policy and guidance documents to improve its ability to implement better-performing energy resilience and energy security solutions.	DoD will continue to analyze data from Military Services and DoD agencies for projects to ensure DoD is effectively and efficiently implementing projects that maximize benefits to mission readiness and assurance. When possible, data will be used to inform leaders, building operators, and building occupants for increased situational awareness of the need for energy conservation and energy efficiency practices. For FY 2018, the Department's projects at least a 21% reduction in energy intensity from FY 2003.

EFFICIENCY MEASURES, INVESTMENT, AND PERFORMANCE CONTRACTING

Energy Savings Performance Contract (ESPC) and Utility Energy Service Contract (UESC) investment/number of projects FY 2017: \$798.5M/37 projects

**Department of Defense
2018 Sustainability Report and Implementation Plan**

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
As noted previously, DoD is focused on implementing energy resilience and energy security in support of advancing mission readiness and assurance.	While ESPCs and UESCs may assist in improving energy security, DoD does not have specific ESPC or UESC goals. DoD seeks to leverage all its authorities to maximize the improvements to mission readiness and mission assurance.	DoD does not have any planned investments. The Department continues to view performance-based contracting as an effective method of improving energy resilience and energy security at the installation level. DoD will continue to use these contracts where they enhance DoD mission readiness, mission assurance, and ultimately DoD's warfighting capability. For FY 2018, DoD projects an investment of \$600 million in EPSC and UESC contracts.

RENEWABLE ENERGY

FY 2017 Status: 5.9% renewable electricity used as a percentage of facility electric use

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
DoD seeks to improve mission readiness and mission assurance and uses renewable energy in support of energy resilience solutions. In 2017, 1,789,494.5 megawatt hours (MWh) of the Department's energy use was from renewable sources. Special contracting authorities, such as power purchase agreements, are used to install and operate renewable energy projects on DoD installations. For example, the Marine Corps Recruit Depot (MCRD) Parris Island awarded a \$90M ESPC in December 2016. The primary energy resilience measures included a 3.5 megawatt (MW) cogeneration plant, 3.5 MW of backup steam generators, and 5.6 MW of solar energy, combined with	In addition to the requirements of the Federal Government under Executive Order (EO) 13834, there is a legislative goal to produce or procure $\geq 25\%$ of the total quantity of facility energy DoD consumes within its facilities during FY 2025 and each fiscal year thereafter from renewable energy sources, per Title 10, United States Code §2911(g)(1)(A) (NDAA 2007).	DoD will continue to evaluate the best technical and operational solutions, which may include forms of renewable energy. The Department will pursue renewable energy to enhance energy security and mission assurance when the business case supports it. For FY 2018, DoD's projects approximately 5.9% renewable electricity use.

**Department of Defense
2018 Sustainability Report and Implementation Plan**

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
an 8 MWh battery that is tied into a base-wide microgrid system.		

WATER EFFICIENCY

FY 2017 Status: 26.9% reduction in potable water (gallons [Gal]/GSF) from FY 2007; 4% reduction from FY 2016

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
<p>The Department considers water metering to be a proven strategy for reducing the consumption of potable water, and the number of meters installed to measure water consumption will continue to increase across the Department. The installation of high-efficiency plumbing fixtures, “smart” irrigation systems, and other technologies is a key strategy across DoD to reduce the potable water intensity of DoD facilities.</p> <p>Landscaping with plants having low water requirements, and the use of non-potable water for irrigation (especially reclaimed wastewater), are typical approaches used across the Department to minimize the use of potable water outdoors. Irrigating with reclaimed wastewater is also used in DoD to reduce the use of potable water.</p> <p>While not as common as other water-efficiency approaches— notably metering and high-efficiency fixtures—some DoD installations reclaim some or all of their wastewater for use in place of potable water.</p>	<p>The Department does not plan against the specific goal of either reducing water consumption or average cost. The Department tracks water consumption and costs separately for industrial, landscaping, and agricultural water, and distinguishes between metered and estimated values.</p> <p>DoD follows the common practice of installing low-flow fixtures in new construction, but some expensive equipment is cost-effective only when units are needed in bulk quantities.</p>	<p>The Department will continue to maximize the efficient use of water resources, recognizing that this is a critical component of mission success. To date, the best method for reducing water use has been leak detection; DoD will continue to use tools and technologies to detect leaks and upgrade aging pipes.</p> <p>The March 10, 2017 Memorandum “Water Use for Landscape Architecture in DoD Installations/Sites” outlines approaches to minimize the use of potable water outdoors. Unified Facilities Criteria (UFC) 3-201-02 on Landscape Architecture is being updated to incorporate changes from the March 2017 Memorandum. The capture and reuse of water will continue to be standard practice in DoD, e.g., in closed-loop washing stations for vehicles and other equipment. For FY 2018, the Department projects a 21.5% reduction in potable water intensity from the FY 2007 baseline.</p>

**Department of Defense
2018 Sustainability Report and Implementation Plan**

HIGH PERFORMANCE SUSTAINABLE BUILDINGS

FY 2017 Status: 1.29% of buildings and 1.52% by GSF; no change from FY 2016

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
In FY 2017, 1.29% of DoD's building area conformed to the revised Guiding Principles, based on over 1.3 billion applicable square feet. DoD policy requires new construction and major renovations to adhere to the Guiding Principles (UFC 1-200-02, High Performance and Sustainable Building Requirements). For example, the Air Force stood up its Resilient Energy Demonstration Initiative (REDI) to develop and deploy innovative technologies and business models to enhance energy resilience at Air Force installations, build a more resilient grid, and mitigate cyber threats to critical infrastructure.	The sheer magnitude of DoD's facility inventory to which the Guiding Principles apply—nearly 46,000 eligible buildings—coupled with fewer new or renovated facilities means that DoD will continue to make relatively small annual improvements. Additionally, the Department pursues internal metrics for sustainable buildings to better reflect the incorporation of many sustainable features in buildings where improvements only partially meet the Guiding Principles.	DoD has no planned evaluations for the coming fiscal year, though the Department projects that 2% of buildings will meet sustainability criteria in FY 2018.

WASTE MANAGEMENT AND DIVERSION

FY 2017 Status: 43% non-hazardous solid waste diverted

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
The Department diverted 43% of its non-hazardous solid waste in FY 2017 and 75% of its Construction & Demolition (C&D) debris in FY 2017—well above the Department's 60% target. Every Military Service as well as the Defense Logistics Agency (DLA) exceeded the C&D target, but only the Air Force and DLA met or exceeded the target for non-hazardous solid waste.	DoD continues to optimize its natural resources and avoid generating unnecessary waste. DoD implements waste prevention and recycling measures and fulfills all Federal requirements with regard to solid, hazardous, and toxic waste management and disposal. This includes statutory requirements that cover hazardous and toxic	DoD will approach waste management and diversion within the context of compliance with statutory requirements, as well as to improve performance and affordability. For FY 2018 and FY 2019, DoD projects diverting 50% of non-hazardous solid waste and 60% of C&D waste.

**Department of Defense
2018 Sustainability Report and Implementation Plan**

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
<p>For example, Eglin Air Force Base (AFB) used innovative recycling and reuse tactics to produce two artificial reefs through the Concrete to Reefs program. Eglin saved > \$60,000 in concrete disposal costs and the local community gained two artificial reefs that will enhance recreational opportunities for residents and tourists while providing a new habitat for a variety of aquatic species.</p> <p>In addition, the Army has evaluated waste profiles from many installations and found food waste is a significant percentage of the total solid waste on an installation (up to 50%). The Army has piloted several programs from food dehydrators to training food preparers to minimize waste.</p>	<p>waste management and disposal, such as the Pollution Prevention Act of 1990 and the Resource Conservation and Recovery Act (RCRA).</p>	

2. Fleet Management:

TRANSPORTATION/FLEET MANAGEMENT

FY 2017 Status: 34.5% reduction in petroleum and 133.6% increase in alternative fuel use compared with FY 2005; 0.1% increase in petroleum use and 10.9% decrease in alternative fuel use from FY 2016

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
<p>DoD reduced petroleum fuel use in its covered fleet due to the disposition of underutilized vehicles and the increased acquisition of Low Greenhouse Gas (LGHG), alternative fuel, and electric vehicles.</p> <p>DoD ensures its annual vehicle-level data is properly and accurately captured in the formal Fleet Management Information System (FMIS) and is submitted to the Federal Automotive Statistical Tool</p>	<p>DoD has difficulty meeting alternative fuel vehicle requirements in areas where alternative fuel is not available or if the vehicle type required to meet the mission is not manufactured by the Original Equipment Manufacturer (OEM) contracted by the General Services Administration (GSA). In areas where alternative fuel is not provided, DoD is using LGHG vehicles if available. If alternative fuel is</p>	<p>DoD will continue to right size its non-tactical fleet as missions change, which may in turn also increase DoD inventory. Also, DoD is considering bringing its entire fleet under one FMIS to optimize Federal fleet performance, reduce associated costs, and streamline reporting. For FY 2018, DoD projects a 54% reduction in petroleum use and about 197% increase in alternative fuel use compared to the FY 2005 baseline.</p>

**Department of Defense
2018 Sustainability Report and Implementation Plan**

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
(FAST) reporting database.	not available in the area of operation and an LGHG vehicle does not exist in the vehicle type, DoD must use Gas Dedicated vehicles and a Functional Needs Exemption is documented.	

3. Cross-Cutting:

SUSTAINABLE ACQUISITION/PROCUREMENT

FY 2017 Status: 0.31% contracts and 8.18% contract dollars with environmental clauses; 0.3% increase in contract dollars from FY 2016

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
<p>The value of DoD’s applicable Federal Procurement Data System (FPDS) contract actions containing sustainable clauses was \$13,807.8M for FY 2017, an increase of \$1,262.8M from the previous year. DoD engaged in 38,019 applicable FPDS contract actions containing sustainable actions.</p> <p>DoD Instruction (DoDI) 4105.72, Procurement of Sustainable Goods and Services, establishes policy, assigns responsibility, and provides compliance goals and direction for the sustainable procurement of goods and services. The Instruction outlines procurement preferences, new contract requirements, training procedures, and program evaluation processes for sustainable procurement.</p> <p>The DoD Sustainable Product Demonstration Program, established to demonstrate performance and cost benefits for sustainable products at DoD installations and during operations, piloted biobased motor oils and biobased greases at several</p>	<p>The percent of contracts and contract dollars with environmental clauses is based on all contract actions (excluding weapons systems). This does not reflect DoD’s rate of compliance with sustainable acquisition requirements, because the universe of contracts considered includes those for which environmental requirements are not applicable.</p>	<p>DoD plans to procure biobased products in accordance with the Farm Security and Rural Investment Act of 2002 §9002; products composed of recovered materials in accordance with RCRA §6002; and energy and water efficient products in accordance with the Energy Policy Act (EPA) 2005 §104 (b). For FYs 2018 and 2019, DoD projects that it will spend \$19,700M on approximately 200,000 contracts with environmental clauses each year. Of this amount, approximately \$34M will be spent on 3,400 contracts for biobased products.</p> <p>DoD will update the Defense Acquisition University Sustainable Procurement Program training to incorporate EO 13834 requirements.</p> <p>In addition, DoD will continue to improve and expand the</p>

**Department of Defense
2018 Sustainability Report and Implementation Plan**

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
DoD installations in partnership with the National Aeronautics and Space Administration (NASA), United States Postal Service (USPS), and the Department of Homeland Security (DHS). These demonstrations resulted in labor savings and reduced operational costs while meeting performance requirements.		Sustainable Product Demonstration Program to identify additional sustainable products, increase mission capability, reduce harm to DoD workforce, and help ensure availability of mission essential products.

ELECTRONICS STEWARDSHIP

FY 2017 Status: 100% compliance with certified recycling disposal guidelines

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
DLA Disposition Services handles the vast majority of DoD electronics at the end of their useful lives. In FY 2017, DLA processed 100% of the end-of-life electronics it received through certified recyclers, totaling 36.1M pounds. It is DoD policy, (per the DoD Electronics Stewardship Implementation Plan) that information technology (IT) electronics must be EPEAT registered. Any device meeting EPEAT requirements also qualifies under ENERGY STAR®. Per DoD policy, all IT contracts must include language on DoD's power management and duplexing goals, and 100% of computers and monitors must have ENERGY STAR features enabled to the maximum degree possible based on mission needs.	Some Military Services and DoD agencies are constrained with regard to purchasing. For example, electronic equipment purchased by the National Security Agency (NSA) and the National Reconnaissance Office (NRO) frequently must meet mission-specific requirements that preclude purchasing restrictions, and security procedures and regulations restrict the specifications of equipment that may be procured.	The Department will continue to maintain 100% compliance on these electronics stewardship metrics in FYs 2018 and 2019. DoD will continue improving policy, guidance, and training on sustainability requirements and compliance methods for electronic office products. DoD uses strategic sourcing vehicles to ensure the procurement of equipment that meets sustainable electronics criteria, and it will continue to do so. DoD will dispose of 100% of electronics at their end-of-life through GSA Xcess®, CFL, Unicor, or Certified Recycler (R2, E-Stewards). Additionally, stewardship efforts are ongoing to recycle rare earth minerals and precious metals with strategic importance to the DoD to mitigate risks and decrease dependencies on

**Department of Defense
2018 Sustainability Report and Implementation Plan**

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
		foreign/single sources for supplies.

GREENHOUSE GAS EMISSIONS

FY 2017 Status: 20.6% reduction in Scope 1 and 2 emissions compared to FY 2008

<i>Implementation Status</i>	<i>Operational Context</i>	<i>Priority Strategies & Planned Actions</i>
DoD’s greenhouse gas (GHG) emissions from Scope 1 and 2 sources in FY 2017 totaled 21.32M metric tons of carbon dioxide equivalents [MMT CO ₂ (e)], 20.6% lower than the FY 2008 base year.	The Department continues to pursue measures that improve the mission readiness and mission assurance of installations. DoD does not have any initiatives to reduce GHG. However, the implementation of the energy efficiency, energy security, renewable energy, and other improvement projects listed above collectively may contribute to the reduction of GHG emissions.	The Department does not have specific initiatives to reduce GHG emissions. However, the Department will continue to track and report Scope 1 and 2 GHG emissions. For FY 2018, DoD projects a 20.7% reduction in Scope 1 and 2 emissions compared to FY 2008.

4. Agency Identified Priorities:

The DoD strongly supports the goal of EO 13834, Efficient Federal Operations, to “enhance the resilience of Federal infrastructure and operations and enable more effective accomplishment of its mission.” In support of the National Defense Strategy, the Department is focused on increasing military readiness and lethality, which includes having resilient infrastructure and business reforms to increase efficiency and reduce costs.

Notable Projects and Highlights

[This section intentionally left blank.]