



Sustainability Report 2014



SUSTAIN THE MISSION • SECURE THE FUTURE



SUSTAINABILITY REPORT 2014

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Main Cover Photo: Army National Guardsman of the 1st Battalion, 151st Infantry Regiment in Parun, Afghanistan (photo: US Army).

Small Photos (Left to Right):

- Arizona Army National Guard pilot program solar parking lot – provides covered parking for 20 vehicles. The top of the parking structure is covered in solar panels and the solar array has a capacity of 44.5 kW DC peak, expected to produce 75,000kWh/year (photo: US Army).
- An endangered gray wolf peers out from a snow covered shelter (photo: Wikimedia Commons).
- Sgt. Lee Savoy, a Soldier with the 256th Brigade Special Troops Battalion, evacuates a child from flood waters caused by Hurricane Isaac, August 30, 2012 (photo: US Army).



Project to create and maintain early successional habitat, Fort Drum, NY. Early successional habitat is important for a variety of species of wildlife, like the ruffed grouse and American woodcock. This type of habitat is rapidly disappearing in the Northeast, but Fort Drum now has more than 260 acres (photo: US Army).



DEPARTMENT OF THE ARMY
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A ready and resilient Army must be able to rapidly deploy, fight, sustain itself in austere environments, and win in an ever-changing, complex strategic environment. To maintain readiness and capability, we are managing our installations in a manner that preserves our resources, budgets, and manpower for the operational Army. We are also establishing a resource-informed culture that will increase our resilience.

Sustainability is a foundation for us to improve the effectiveness of Army business processes. Sustainability provides readiness and resilience at best value, today and into the future. Through a synchronized campaign of performance initiatives, business process changes, and education and training, the Army seeks to achieve a lasting capability to use its resources to the greatest benefit. Increased efficiencies in energy, water, and waste at our home installations are improving our day-to-day operations. These improvements also increase our energy and water security while helping offset rising operating costs. Similar efforts at our contingency bases reduce the challenges, risks, and costs associated with the sustainment of dispersed bases.

Within the Army, sustainability goes well beyond energy, water, and waste. Our people are our strength, and we will continue to invest in our Soldiers, Civilians, and Family members. We are integrating sustainability principles into Soldier and Civilian education programs at every level, including leader development programs. We are also focusing on programs that support the holistic health and well-being of our people.

Partnerships with our surrounding communities support the Army's mission and further expand the well-being of our Soldiers and Families. Our partnerships range from efforts that preserve conservation lands surrounding our installations, develop renewable energy projects, and foster a variety of shared services, to efforts that support Soldier career transition.

These efforts and more are summarized in our Army Sustainability Report 2014. We are proud of our achievements, especially in light of our constrained budget, and look forward to further advances in the future. Army Green is Army Strong!


Daniel B. Allyn
General, U.S. Army
Vice Chief of Staff


Brad R. Carson
Under Secretary of the Army

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Executive Summary

Sustainability is not a distinct program or initiative within the Army; it is an organizing principle being instilled in everything the Army does to support its mission, including planning, training, equipping, and operations. The Army Sustainability Report 2014 (ASR14), the fifth issued, describes the Army's continued progress pursuing sustainability to enable its current and future missions; safeguard human health and the well-being of Soldiers, Families, and Civilians; control costs; and protect the natural environment.

The ASR14 reports Army progress using relevant metrics established by public laws, executive orders (EOs), the Department of Defense (DoD), the Army, and other standards development organizations. This report highlights activities and accomplishments — performance data, success stories, and other topics — for fiscal year (FY) 2012 and FY13. It shows Army-level progress toward meeting the objectives of EO 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” which is summarized with other military services in the annual *DoD Strategic Sustainability Performance Plan (SSPP)*. It also communicates the Army’s sustainability strategy and covers activities and performance beyond the requirements of EO 13514, including the social elements of sustainability.

Like previous reports, ASR14 uses the Global Reporting Initiative (GRI) framework to communicate organizational performance and policies to stakeholders in a form comparable to that of other private- and public-sector organizations. ASR14 is published in accordance with the GRI *RG: Sustainability Reporting Guidelines* (third generation, or G3) following the guidance of GRI’s *Public Agencies Sector Supplement*. The Army reports data to GRI Application Level B.

ASR14 Highlights

ASR14 summarizes Army sustainability activities and accomplishments in FY12 and FY13. Among the highlights, the Army accomplished the following:

- Issued a high-level climate change vulnerability assessment that evaluated regional vulnerabilities of mission activities, infrastructure, and training lands.
- Awarded multiple award task order contracts for renewable and alternative energy power production to enhance mission capabilities and advance energy security.
- Issued a Secretary of the Army policy focused on improving the Army’s capabilities through better integration of operational energy considerations.
- Established an energy security and sustainability objective in the *Army Campaign Plan 2012* to recognize their roles and significance.
- Established the Net Zero Energy, Water, and Waste pilot initiative, laying the groundwork to transition to Army-wide implementation.

Sustainable Installations

At the close of FY13, the Army managed 152 installations, 13.6 million acres of land, and more than 1 billion square feet of buildings. To enable the

mission, sustainable installations provide access to training lands; increase the efficiency of energy and water use; reduce operational costs; conserve energy and natural and cultural resources; protect the health of Soldiers, Civilians, and the surrounding communities; and comply with applicable environmental laws. By providing these services, sustainable installations also increase the resiliency of the Force and the overall Army.

The Army continued to make energy investments and see returns on those investments. At the end of FY13, facility energy intensity was reduced by over 14 percent from the FY03 baseline. Installations had 250 small- and large-scale renewable energy projects, more than doubling the Army’s use of renewable energy. Non-tactical vehicle (NTV) petroleum use was reduced by nearly 33 percent since FY05 — hitting the FY20 target 7 years early. The Army reduced Scope 1 and 2 greenhouse gas (GHG) emissions by 4.8 percent and Scope 3 emissions by 4.3 percent as of FY13, relative to the FY08 baseline. As of the end of FY13, 2 percent of the Army’s buildings were designated as high performance sustainable buildings.

Installation potable water consumption and potable water consumption intensity (gallons of water used per gross square foot of facility space) continued downward trends, with reductions of 24.3 percent and 26.6 percent respectively from the FY07 baseline. In FY13, installations reused or recycled 43 percent of non-hazardous solid waste and 75 percent of construction and demolition debris instead of landfilling. Toxic chemical releases totaled 17 million pounds in calendar year (CY) 2012, down 6.8 million pounds from CY06.

Although facing many critical issues, the Army continued to effectively manage

testing and training lands to ensure mission readiness. By the end of FY13, more than 231,000 acres surrounding 28 installations were protected through the Army Compatible Use Buffer (ACUB) program. In FY13, 97 percent of installations had compliant integrated natural resource management plans. At the same time, 98 percent of installations had integrated cultural resource management plans, but installations with certified plans declined to 65.9 percent due to FY13 funding constraints. Similar funding constraints affected environmental management system (EMS) implementation and only 61 percent of the 140 installations required to maintain EMSs were considered fully implemented in FY13, a decrease from FY12. The Army received 65 enforcement actions for noncompliance in FY12 and 75 in FY13.

Sustainability in Operations

Sustainability principles apply to operations just as they do to installation management. In FY13, the Army had

more than 168,000 Soldiers deployed or forward stationed in over 150 countries. At the operational level, long supply chains can constrain the Army's ability to complete its missions. At the tactical level, energy and water constrain a unit's endurance and limit its flexibility and freedom of action. To address these challenges, the Army has identified doctrinal gaps. Efforts are underway to integrate energy and sustainability considerations in its doctrine, operations, and equipment.

In FY12 and FY13, the Army continued to identify and field solutions that improve capabilities of Soldiers, weapon systems, and base camps. In FY13, the Army fielded expeditionary power solutions that reduced Soldier power load and increased mobility and endurance. In FY12–13, the Army reduced the dismounted Soldiers' 72-hour battery load from 13.3 pounds to 8.9 pounds. The Army also qualified renewable fuels from two processes for use in 50/50 blends with JP-8 in all ground equipment.

Commitment to Soldiers, Families, and Communities

All of the successes, programs, policies, and initiatives described in this report rely on the Army's core foundation of the Army Family. The Army can only achieve sustainability when the Army Family is ready and resilient. At the end of FY13, the Army had more than 1.3 million Active and Reserve Soldiers and Civilian employees.

The Army's safety and occupational health programs continued to protect Soldiers, Families, and Civilians through accident prevention and comprehensive health programs. In March 2013, the Army launched its Ready and Resilient Campaign to communicate programs to promote physical, mental, and spiritual fitness; emotional stability; dignity and respect of Soldiers, Families, and Civilians; and personal growth. It also began establishing embedded behavior health (EBH) teams to improve Soldier's access to healthcare before and after deployment. As of August 2013, 45 EBH teams had been established.

The Comprehensive Soldier and Family Fitness Program provides skills and coping strategies for Soldiers and Families. The Army has certified 281 trainers. Over 152,000 Soldiers, Family members, and Civilians have received resiliency training.

The Army's Community Covenant fosters and sustains state and community partnerships to support Soldiers, Veterans, and their Families. From program inception in FY08 through FY13, towns in all 50 states, and the District of Columbia, have hosted more than 700 Community Covenant signing ceremonies where local leaders pledged their support to military Families.



Soldiers assigned to Bravo Company, 3rd Squadron 4th Cavalry Regiment, 3rd Brigade Combat Team, 25th Infantry Division, move through an area during a training exercise, April 16, 2013, at Makua Valley, HI (photo: Sgt. Brian C. Erickson).

Introduction

The Army Sustainability Report 2014 (ASR14), the fifth issued, describes the Army's continued progress pursuing sustainability to enable its current and future missions, safeguard human health, control costs, and protect the natural environment.

In ASR14, the Army reports progress using relevant metrics established by public laws, executive orders (EOs), the Department of Defense (DoD), the Army, and other standards development organizations. This report highlights activities and accomplishments — performance data, success stories, and other topics — for fiscal year (FY) 2012 and FY13. It shows Army-level progress toward meeting the objectives of EO 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,”¹ summarized with the other military services in the DoD *Strategic Sustainability Performance Plan* (SSPP).² It also communicates the Army's sustainability philosophy and strategy, covers activities and performance beyond the requirements of EO 13514, and addresses the human element of sustainability.

Like previous reports, ASR14 uses the Global Reporting Initiative (GRI) framework to communicate organizational performance and policies to stakeholders in a form comparable to that of other private- and public-sector organizations. ASR14 is published in accordance with the GRI *RG: Sustainability Reporting Guidelines* (third generation, or G3) in conjunction with GRI's *Public Agencies Sector Supplement*.³ The Army reports data to GRI Application Level B, meaning it reports all portfolio criteria describing the organization and its processes using performance indicators in economics, environment, human rights, labor, society, and product responsibility.

The annex to this report, which comprehensively reports GRI indicators, is available online at www.asaie.army.mil/Public/ES/sustainability.html.

The chapters in this report highlight activities and accomplishments associated with installations, operations, and the human element of sustainability (Soldiers, Families, and Communities).

Army Mission, Leadership, and Organization

Sustainability is not a distinct program or initiative within the Army. It is an organizing principle being instilled in everything the Army does to support its mission, including planning, training, equipping, and operations. The Army is institutionalizing sustainability in policy and doctrine and implementing it throughout the organizations and functions of the institutional and operational Army, which are defined in more detail below.



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For over a decade, the Army has been working to embed a sustainability culture and our efforts are paying off. Initiatives that started as small localized efforts over a decade ago are now established Army-wide programs and methodologies that ensure effective and efficient resource use. The *Army Sustainability Report 2014* highlights our progress in Fiscal Years 2012-2013.

We have continued our overall positive trends against the Federal energy, water, waste, high-performance buildings, and other sustainability goals. We've also continued to expand our Army-specific efforts, including our Net Zero installations, operational energy and water initiatives, sustainable base camps, and comprehensive Soldier health and well-being programs. Our public and private partnerships are thriving, through programs and initiatives including the Army Compatible Use Buffer program, the Energy Initiatives Task Force, the Army Community Covenant, and numerous collaboration efforts from other Federal agencies to local communities.

Looking to the future, we have begun to assess our vulnerabilities to climate change, and are working to enhance our energy and water security. Energy is being integrated as a key performance parameter in our acquisition process. We are updating Army doctrine, policies, guidance, and training to further inculcate sustainability considerations.

Sustainability is a force multiplier for the Army, enhancing our mission effectiveness today. It is also the foundation for our efforts to create a more adaptable and resilient Force prepared for a complex, uncertain, and rapidly changing future. Army Strong!

Katherine Hammack



LEED-certified Community Emergency Services Station, Fort Bragg, NC (photo: US Army Corps of Engineers Savannah District).

Mission

The Army's mission is "to fight and win our Nation's wars by providing prompt, sustained land dominance across the full range of military operations and spectrum of conflict in support of combatant commanders."²⁴

The Army achieves this by:

- Executing Title 10 and Title 32 *United States Code* (USC) directives, including organizing, equipping, and training forces for the conduct of prompt and sustained combat operations on land.
- Accomplishing missions assigned by the President, Secretary of Defense (SecDef), and combatant commanders and transforming for the future.

Leadership

On September 21, 2009, the Honorable John McHugh became the 21st Secretary of the Army (SecArmy). The Honorable Brad Carson became the 31st Under Secretary of the Army on March 27, 2014. He was preceded by Dr. Joseph Westphal (2009 to 2014).

General Raymond Odierno became the 38th Chief of Staff of the Army (CSA) on September 7, 2011. General Daniel Allyn became the 35th Vice Chief of Staff of the Army on August 15, 2014. Before General Allyn, General John Campbell, General Lloyd Austin, and General Peter Chiarelli held that position during the period covered by this report. (To learn more about Army leadership, visit the Army website at www.army.mil/leaders.)

The SecArmy has designated the Under Secretary of the Army as the Senior Sustainability Official (SSO), and the Assistant Secretary of the Army for Installations, Energy and Environment (ASA(IE&E)) as the office of primary responsibility to support the SSO. The ASA(IE&E) also serves as the Army's Senior Safety Official. The Deputy Assistant Secretary of the Army for Energy and Sustainability (DASA(E&S)) is the Army's designated Senior Sustainability Executive and Senior Energy Executive. The Army's Federal Preservation Officer is the Deputy Assistant Secretary of

the Army for Environment, Safety and Occupational Health, who also serves as the Army's lead for the Defense Occupational Health Program.

Organization

The Army is one of the three military departments (Army, Navy, and Air Force) reporting to SecDef. It comprises two distinct, equally important components: Active and Reserve. The Active Component includes Soldiers on full-time duty in the active military service of the United States, including members of the Reserve Component serving on Active duty or full-time training duty. The Reserve Component includes the US Army Reserve (USAR) and the Army National Guard (ARNG). Army Civilians support all components and are critical to Army success in training, manning, power projection, equipping, medical support, support to Soldiers and Families, base support, acquisition, and management.

The Army has operational and institutional missions. The operational Army consists of numbered armies, corps, divisions, brigades, and battalions that conduct full-spectrum operations around the world. The institutional Army supports the operational Army, furnishing the infrastructure necessary to raise, train, equip, deploy, and ensure the readiness of all Army forces. The training base provides military skills and professional education. It also allows the Army to expand rapidly in time of war. The industrial base furnishes world-class equipment and logistics. Army installations are the power-projection platforms required to deploy land forces promptly to support combatant commanders. Once those forces are deployed, the institutional Army renders the logistics needed to support them. As of 2013, the Army had more than

532,000 Soldiers on active duty, 556,000 reserve component troops, and 215,000 Civilians to execute its mission.⁵

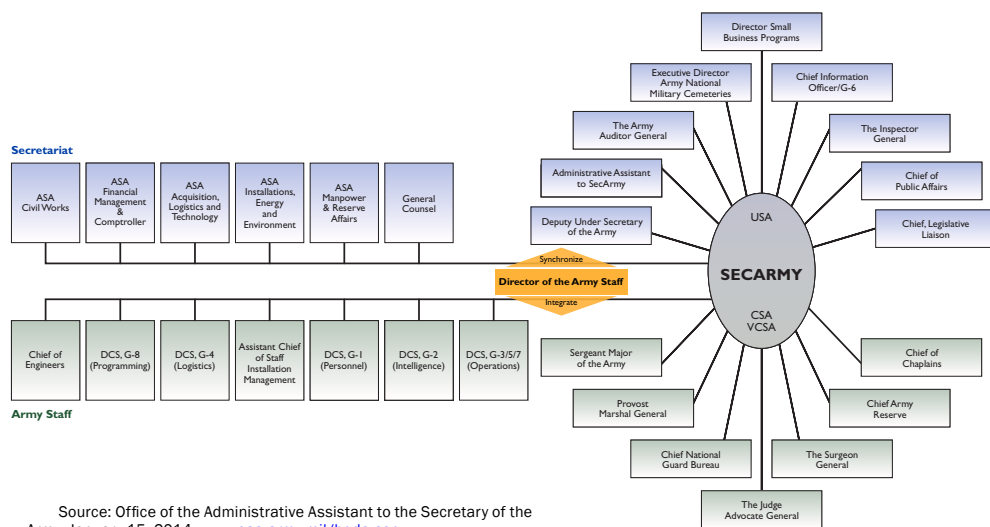
Figure 1 illustrates how Headquarters, Department of the Army (HQDA), under the direction of SecArmy and CSA, leads and manages the Army. The ASA(IE&E), under SecArmy, and the Assistant Chief of Staff for Installation Management (ACSIM), under CSA, direct and oversee sustainability efforts. Although ASA(IE&E) and ACSIM lead and coordinate sustainability efforts, as with other elements of the Army's mission, success relies on the direct involvement of all organizations and functions across the Army. (Visit the Army website, www.army.mil/info/organization/, to learn more about how the Army is organized.)

Figure 2 illustrates the Army command (ACOM) structure as of August 2014. SecArmy designates the ACOMs and sets their command responsibilities. They perform multiple Army Title 10 USC functions across various disciplines. The three ACOMs are the US Army Training and Doctrine Command (TRADOC), US Army Materiel Command (AMC), and US Army Forces Command (FORSCOM):

- TRADOC recruits Soldiers, develops leadership among Soldiers and Civilians, designs the future combat force, and maximizes institutional learning.
- AMC supports Army acquisition and logistics, including managing industrial bases and processes.
- FORSCOM trains and mobilizes Soldiers and deploys them to the operational Army.

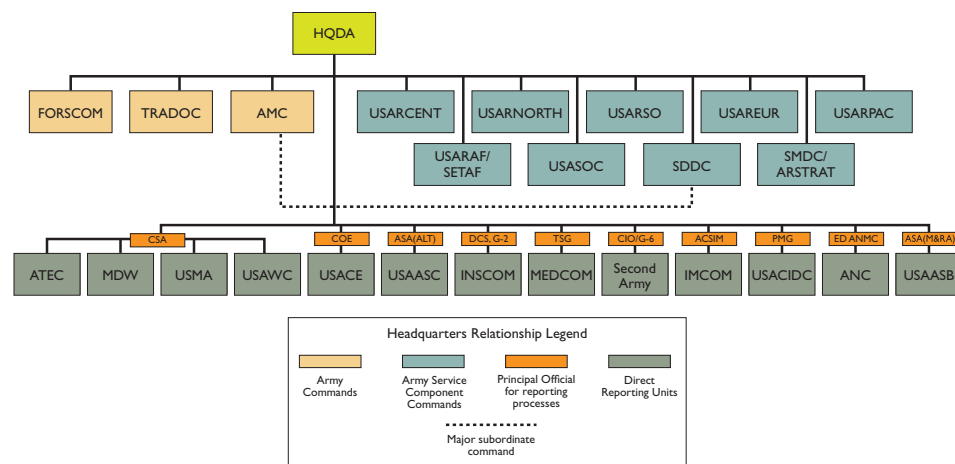
Direct reporting units (DRUs) are Army organizations, designated by SecArmy, comprised of one or more units providing broad support with institutional or operational functions in a unique discipline not otherwise available elsewhere in the Army. DRUs discussed in this report include the US Army Medical Command (MEDCOM),

US Army Corps of Engineers (USACE), US Army Installation Management Command (IMCOM), and US Army Reserve Command. An Army service component command is an Army Force, designated by SecArmy, primarily comprised of operational organizations serving as the Army component for a combatant commander.



Source: Office of the Administrative Assistant to the Secretary of the Army, January 15, 2014, www.oaa.army.mil/hqda.aspx.

Figure 1. HQDA Organizational Chart (as of January 2014)



Note: See the "Abbreviations" section at the end of this report for definitions. Source: Office of the Administrative Assistant to the Secretary of the Army, March 12, 2014.

Figure 2. Army Command Structure (as of March 2014)

FY12 and FY13 Highlights

ASR12 described the importance of sustainability to the Army and the evolution of sustainability from the early 2000s through FY11.⁶ It noted actions to use sustainability as an organizing principle to synchronize efforts across the Army and formally recognized the nexus between sustainability and the Army's national security mission. Activities and accomplishments in FY12 and FY13 continued to demonstrate the Army's commitment to the sustainability of its installations and operations.

During FY12 and FY13, the Army worked to do the following:

- Institutionalize sustainability in doctrine, policy, training, operations, and acquisition.
- Implement approaches that maximize efficiencies and focus resources and efforts.
- Increase awareness, cooperation, and support for sustainable practices.
- Enable up-front investments that will result in lower operating costs.
- Instill a sustainability ethic and personal commitment from Soldiers and Civilians through the highest Army leadership.

Key efforts to advance sustainability in FY12 and FY13 include the following.

Table 1 summarizes key sustainability progress and metrics for FY12 and FY13. It highlights key measures associated with monitoring of sustainability performance. Additional data are presented throughout the report.

The annex to this report, available online at www.asaie.army.mil/Public/ES/sustainability.html, contains a complete index to GRI sustainability performance metrics in tables that link to relevant, publicly available Army reports and documents.

Climate Change Vulnerability Assessment <i>Identifying potential mission vulnerabilities to maintain readiness in a changing climate</i>
<p>In FY12 and FY13, the Army began efforts to identify and evaluate regional vulnerabilities of mission activities, infrastructure, and training lands associated with climate change. In FY13, the Army completed its <i>High-level Climate Change Vulnerability Assessment</i>.⁷</p>
Multiple Award Task Order Contracts (MATOCs) for Renewable and Alternative Energy Power Production <i>Partnering with industry to enhance mission capabilities and advance energy security</i>
<p>The Army Energy Initiatives Task Force (EITF), working through the USACE, awarded MATOCs in four technology areas: biomass, solar, wind, and geothermal. DoD will use these MATOCs to procure reliable, locally generated, renewable, and alternative energy for installations through power purchase agreements.⁸</p>
Army Operational Energy Policy <i>Creating an energy-informed culture</i>
<p>On April 30, 2013, SecArmy issued a policy on operational energy, which focuses on improving the Army's capabilities through better use of energy. The policy directs all levels of command to understand how energy strategies enhance their mission; assigns responsibilities for integrating operational energy into existing policy, strategies, and regulations; and ensures operational energy is accounted for in the Army's energy consumption totals.</p>
Army Campaign Plan (ACP) 2012 <i>Establishing an energy security and sustainability objective</i>
<p>In ACP 2012 Army Senior Leadership prioritized energy security and sustainability. As Section IV of <i>The Army Plan</i>, the ACP lays out the Army's long-range plans for coordinating and synchronizing transformation efforts to manage change and achieve required future capabilities. Campaign Objective 2-0 focuses on cost-effective execution of the Army's environmental compliance, conservation, and cleanup programs to protect human health and the environment at installations. Subordinate major objectives concentrate on cleanup and natural and cultural resources management. Campaign Objective 8-0 addresses achieving energy security and sustainability goals. Subordinate major objectives focus on the energy used by installations and operational forces, water use across installations and operations, and energy and water use in the Army's civil works portfolio.</p>
Army Net Zero Initiative <i>Moving from pilots to Army-wide implementation</i>
<p>In FY12 and FY13, the Army established its Net Zero pilot initiative with the goal of reducing consumption of natural resources at Army installations to an effective rate of zero.⁹ The Army expanded the Net Zero approach to all permanent Army installations in early 2014, when SecArmy issued a directive to commands to "implement Net Zero to the maximum extent practical and fiscally prudent."¹⁰</p>

Table 1. Army Sustainability Progress Highlights

DoD Sustainability Goals ^a	Units	Data			Status	ASR Page #
		Baseline	FY12	FY13	As of FY13	
Goal 1—Reduce the Use of Fossil Fuels						
By FY15, reduce energy intensity of facilities by 30% from FY03 levels ^b	kBtu/GSF	97.2 FY03	82.0	83.4	14.2% Reduction	14
By FY20, produce or procure at least 18% of electricity consumed by facilities from renewable sources ^{b, c}	%	NA	0.5%	1.1%	1.1%	15
By FY20, reduce the vehicle fleet use of petroleum products by 30% from FY05 levels ^b	Million GGE	43.8 FY05	31.3	29.5	32.9% Reduction	17
Goal 2—Improve Water Resources Management						
By FY20, reduce the potable water consumption intensity of facilities by 26% from FY07 levels ^b	Gal/GSF	57.6 FY07	43.0	42.3	26.6% Reduction	18
Goal 3—Reduce Greenhouse Gas (GHG) Emissions Associated with Army Operations						
By FY20, reduced GHG emissions from Scope 1 and 2 sources by 34% from FY08 levels ^d	Million MTCO ₂ e	9.6 FY08	9.4	9.2	4.8% Reduction	17
Goal 4—Assess Climate Change Risks and Improve Resiliency						
		Completed high-level vulnerability analysis in FY13. ^e				17
Goal 5—Minimize and Optimally Manage Solid Waste						
By FY15, divert 50% of non-hazardous solid waste from the waste stream ^d	%	NA	50.4%	43.3%	43.3% Diversion	18
By FY15, divert 60% of construction and demolition debris from the waste stream ^d	%	NA	64.1%	75.1%	75.1% Diversion	19
Goal 6—Minimize the Use and Release of Chemicals of Environmental Concern						
By FY20, reduce on-site releases and off-site transfers of toxic chemicals by 15% ^d	Million lbs	23.9 CY06	17.0 (CY12)	NYA	28.7% Reduction (CY12)	19
All installations have integrated pest management plans prepared, reviewed, and updated annually by pest management professionals ^d	%	NA	100%	84%	84% Approved	23
Goal 7—Make Sustainability Practices the Norm						
By FY15 (holding through FY20), 15% of existing buildings conform to Guiding Principles on High Performance and Sustainable Buildings ^{b, d}	%	NA	<1%	2%	2%	20

^a Table 1 includes select metrics. Additional data are presented in the report. Goals have been rephrased for consistency.

^b Source: Department of Defense, *Annual Energy Management Report, Fiscal Year 2012*, June 2013, www.acq.osd.mil/ie/energy/energymgmt_report/FY%202012%20AEMR.pdf. Department of Defense, *Annual Energy Management Report, Fiscal Year 2013*, June 2014, www.acq.osd.mil/ie/energy/energymgmt_report/FY%202013%20AEMR.pdf.

^c Excludes thermal energy projects.

^d Source: Department of Defense Sustainability Performance Report, FY 2013, August 14, 2013, www.denix.osd.mil/sustainability/loader.cfm?csModule=security/getfile&pageid=35931.

Department of Defense Sustainability Performance Report, FY 2014. (Report not released as of publication of ASR14. Data made publicly available in ASR14.)

^e Source: US Army Corps of Engineers Engineer Research Development Center, *High-level Climate Change Vulnerability Assessment*, 2013, www.asaia.army.mil/Public/ES/doc/ArmyHigh-LevelClimateChangeVulnerabilityAssessment2013final.pdf.

Note: kBtu/GSF = kilo British thermal units per gross square foot; GGE = gasoline gallon equivalent; Gal/GSF = gallons per gross square foot; MTCO₂e = metric tons of carbon dioxide equivalent gases; NA = not applicable; NYA = not yet available at time of publication; lbs = pounds.

Sustainable Installations

As of September 30, 2013, the Army's physical environment consisted of 152 installations, 13.6 million acres of land, and more than 1 billion square feet of buildings.¹¹ Installations are where the Army trains the force and mobilizes military power. These are places where people work and live.

To enable the mission, sustainable installations provide access to training lands; increase the efficiency of energy and water use; reduce operational costs; conserve energy; protect natural and cultural resources; safeguard the health of Soldiers, Civilians, and the surrounding communities; and comply with applicable environmental laws.

Net Zero Initiative

The Army Net Zero initiative seeks to make installations net zero in terms of energy, water, and solid waste. For energy, this means producing as much renewable energy on-site as they use in a year. A Net Zero water installation

Progress made since the announcement of the Net Zero Initiative in October 2010 has led to Army-wide implementation.

limits the consumption of freshwater resources and returns water to the same watershed so as not to deplete the groundwater and surface water resources of the region in both quantity and quality over the course of a year. A Net Zero waste installation reduces, reuses, and recovers waste streams, converting them to valuable, usable resources, and disposes of no solid waste in landfills.

Since April 2011, 17 pilot installations and 1 state-wide energy pilot have been striving toward Net Zero energy, water, waste, or all three. These pilots serve as test beds to identify best practices, as well as lessons learned, to be institutionalized across the Army. In FY12, comprehensive energy and water evaluations and waste evaluations were conducted at pilot installations to establish baselines for energy and water use and waste generation under current conditions. The data collected were used to develop roadmaps that will guide the pilot installations in striving toward their respective Net Zero goals by FY20. The *Army Net Zero Water Balance and Roadmap Programmatic Summary*, released in October 2013, summarizes the baseline assessments and roadmaps at the eight Net Zero water installations.¹²

In FY12 and FY13, pilot installations implemented projects for energy and water efficiency, renewable energy development, aquifer recharge, recycling, and others. For example, in FY12 and FY13, Fort Hunter Liggett completed construction on two photovoltaic solar energy projects providing more than 2.1 megawatts (MW). A combination of additional solar projects, possible geothermal power and ground source heating/cooling, and substantial energy conservation measures are being considered as Fort Hunter Liggett strives toward the goal of Net Zero energy consumption.¹³

A key factor in the Net Zero Initiative is collaboration internally and with other federal agencies such as the General Services Administration (GSA), Environmental Protection Agency (EPA), and Department of Energy (DOE). In FY13, the Army worked with EPA on several water projects at Fort Riley, KS, including one to reduce



Source: Office of the Assistant Secretary of the Army for Installations, Energy and Environment (OASA/IE&E).

Figure 3. Army Net Zero Hierarchy Prioritizes Steps to Achieve Net Zero

water consumption through education and another to test the treatment of wastewater using a membrane bioreactor. The Army also worked with the GSA at Fort Carson, CO, to evaluate high-performance buildings and behavior change. With DOE, it worked to accelerate the use of combined heat and power at Army installations.¹⁴

Progress of Net Zero pilot installations was reported in the May 2013 *Net Zero Progress Report*.¹⁵ The Net Zero pilot is expanding Army-wide. In early 2014, SecArmy directed all commands to implement Net Zero to the maximum extent practicable and fiscally responsible.¹⁶

Energy

At installations, the Army uses energy to heat, cool, light, and power facilities and to operate vehicles and equipment. The Army is striving to make energy-informed decisions to improve

efficiency, enhance energy security, and reduce the costs of operations.

Installation Facility Energy Efficiency

With more than a billion square feet of building space to house and support Soldiers, vehicles, equipment, and supplies, the Army faces a significant challenge in efficiently powering these facilities. It also has a vast opportunity for improvement.

The Army's energy-efficiency programs seek to improve the efficiency of operations, reduce consumption, reduce operational costs, conserve energy resources, and support efforts to improve mission effectiveness.

Figure 4 shows the Army's facility energy intensity. In FY13, Army facilities operated with an average energy intensity of 83.4 kBtu/GSF. A slight increase from FY12, it still represents a 14.2 percent decrease from the FY03 baseline. Reductions in total

building area (14.7 million square feet in FY13) affect this metric.¹⁷ For example, although energy intensity increased from FY12 to FY13, in British thermal unit (Btu) per GSF, the Army realized an absolute reduction of 54 billion Btu based on total consumption.

With drawdowns in Iraq and Afghanistan, the Army had more Soldiers at home installations than in previous years — a positive change that results in increased energy demand. Installations also faced reduced funds for undertaking energy-efficiency projects, and some industrial plants had an increased workload.¹⁸ Despite these challenges, the Army's energy intensity is well below the federal average.¹⁹ Much work remains to achieve the Energy Independence and Security Act of 2007 (EISA 2007) goal of reducing energy intensity by 30 percent by FY15, but the Army remains committed to reducing energy consumption.

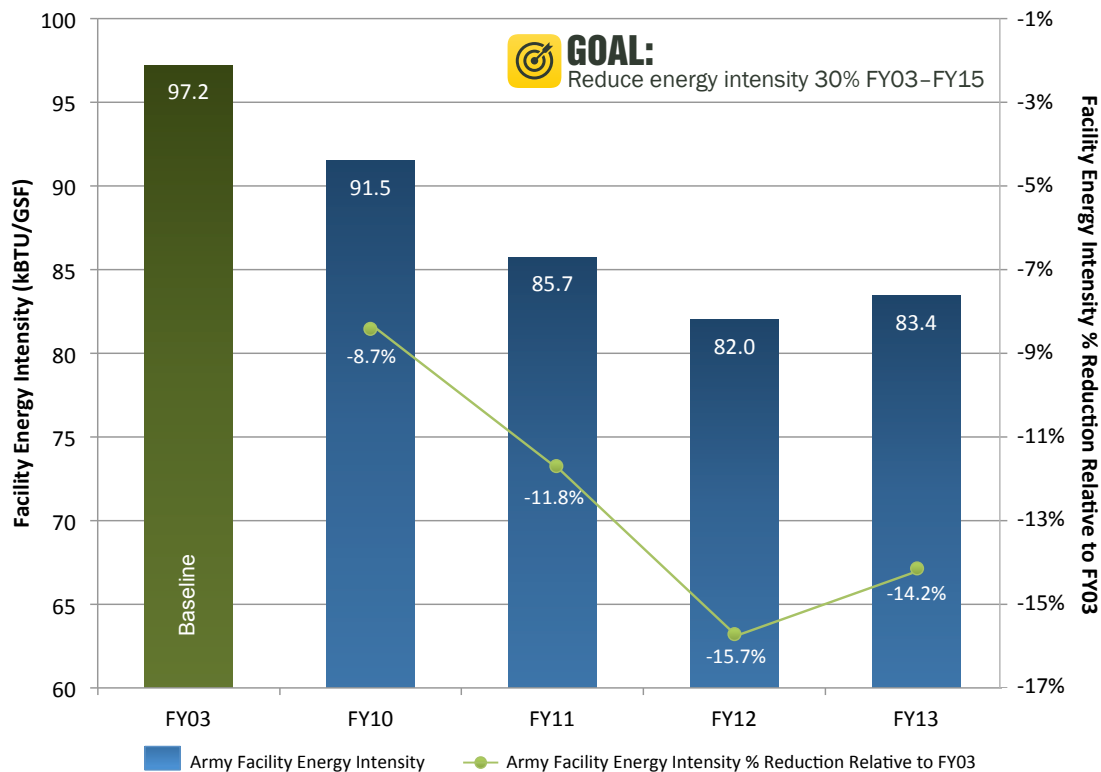


Figure 4. Facility Energy Intensity Reductions, FY10-13

Part of the Army's strategy for energy efficiency is enhancing energy management capabilities through training, advanced metering, and energy savings performance contracts (ESPCs). The Army invested more than \$100 million of appropriated funds in energy efficiency and water conservation projects in FY13 — an investment expected to save 500 billion Btu per year starting in 2014.²⁰

The Army's Energy Conservation Investment Program (ECIP) funded 15 projects at 12 installations in FY13 with projected annual savings of \$3.9 million and energy savings of 289 billion Btu. ECIP uses life-cycle cost analysis to identify projects that reduce total ownership costs. In FY13, the Army partnered with DOE's Idaho

Between December 2011 and December 2013, the first phase of the President's Performance Contracting Challenge (PPCC), the Army executed \$393 million in ESPC/UESCs, amounting to nearly 40 percent of the total PPCC investment for the entire Federal Government. The Army was one of only eight federal entities to meet its PPCC goal.²³

National Laboratory and USACE to validate the scope, cost estimates, and life-cycle evaluations of projects.²¹

The Army also continued to implement ESPCs and utility energy

service contracts (UESCs). An ESPC is a partnership between the Army and an energy service company (ESCO), in which the ESCO designs and finances energy conservation and renewable energy projects. The ESPC is paid for by energy cost savings over the length of the contract — after which the Army accrues additional cost savings. UESCs are financed through utilities. In FY12 and FY13, the Army awarded a total of \$765 million in ESPC and UESC projects.²²

Beyond energy use, the Army also is improving energy security by ensuring continuity of operations during utility outages. In FY13, the Army added backup lines for power distribution, relocated overhead power lines, and upgraded aging utility infrastructure.²⁴ Installations also develop energy security plans to ensure the resiliency of operations.

Fort Carson Saves Energy

The Directorate of Public Works at Fort Carson received the 2013 Federal Energy Management Program (FEMP) Director's award for its energy initiatives. Fort Carson has reduced its energy intensity by 14.7 percent and water intensity by 8 percent from their baselines. They retrofitted lighting, replaced chillers, and expanded their energy management control system, saving an estimated \$60,000 annually.²⁵



Battalion Headquarters solar array at Fort Carson, CO (photo: Harry Weddington, USACE).

Renewable Energy

Renewable energy broadens the sources of energy available to installations and reduces pollution. More importantly, it can provide energy security and continuity of operations during electrical grid outages. The Energy Policy Act of 2005 (EPAct05) requires federal agencies to purchase or generate 7.5 percent of energy from renewable electricity sources starting in 2013. The National Defense Authorization Act (NDAA) established a goal of 25 percent of consumption from renewable sources by 2025. The DoD SSPP has a goal of producing or procuring 18 percent renewable electricity by 2020. The Army has set an additional goal of generating 1 gigawatt (GW) in large-scale renewable energy projects by FY25. Table 2 shows Army renewable energy use. From FY12 to FY13, the Army more than doubled its renewable energy consumption to 1.1 percent of total facility energy use. A total of 106,493 MW hours of renewable energy were used as electricity in FY13.

Table 2. Renewable Energy Use

Metric	Units	Baseline	FY10	FY11	FY12	FY13
Electricity use met by renewable energy (excludes thermal energy)	%	NA	2.0	0.5	0.5	1.1
Electricity use met by renewable energy (includes thermal energy)	%	NA	5.6	4.3	5.9	7.1

Note: FY10–FY11 reduction reflects the Army’s decision to reduce the purchase of renewable energy certificates (RECs) and meet goals by adding renewable energy projects on its installations.
 Source: DoD, Department of Defense, Annual Energy Management Report, Fiscal Year 2013, June 2014, www.acq.osd.mil/ie/energy/energymgmt_report/FY%202013%20AEMR.pdf.

Table 3. FY12–13 On-Site Renewable Electricity Generation Projects

Thermal renewable energy projects, including solar thermal energy or ground source heat pumps, do not count toward compliance with EPAAct05 but are included in NDAA and DoD renewable energy goals. When thermal renewable energy projects are included, the Army’s use of renewable energy increases from 5.9 percent in FY12 to 7.1 percent in FY13. In FY12, new solar thermal projects were operating in locations ranging from Fort Jackson, SC, to US Army Garrison (USAG) Kaiserslautern in Germany. In FY13, the Army added six more projects.²⁶

The Army is pursuing greater adoption of small- and large-scale renewable energy technologies on installations. At the end of FY13, the Army had 250 projects producing electricity from renewable sources.²⁷ Table 3 shows the locations and capacities of on-site renewable electricity projects completed in FY12 and FY13.

In FY13, the Army awarded 8.64 MW of renewable energy projects through ESPCs, UESCs, and other utility agreements at Fort Bliss, Fort Buchanan, Adelphi Laboratory Center, and Fort Irwin. The Army

Projects Completed in FY12		Projects Completed in FY13	
New Capacity (kW)	Location	New Capacity (kW)	Location
Solar Photovoltaic		Solar Photovoltaic	
175	63 rd Regional Support Command, GA	477	63 rd Regional Support Command, GA
15	Arizona ARNG, AZ	202	Arizona ARNG, AZ
88	California ARNG, CA	10	Fort Benning, GA
46	Delaware ARNG, DE	1,380	Fort Bliss, GA
15	Fort Benning, GA	125	Fort Bragg, NC
504	Fort Bliss, GA	2,921	Fort Buchanan, Puerto Rico
227	Fort Bragg, NC	670	Fort Drum, NY
90	Fort Drum, NY	34	Fort Hood, TX
4	Fort George Meade, MD	84	Fort Huachuca, AZ
1,160	Fort Hunter Liggett, CA	1,000	Fort Hunter Liggett, CA
98	Fort Irwin, CA	2,100	Fort Knox, KY
2	Fort Knox, KY	2,500	Fort Lewis, WA
50	Kentucky ARNG, KY	50	Fort Rucker, AL
36	Kwajalein Atoll, Rep. of the Marshall Islands	193	Idaho ARNG, ID
170	New Jersey ARNG, NJ	6	Kentucky ARNG, KY
644	Ohio ARNG, OH	40	Minnesota ARNG, MN
182	Oregon ARNG, OR	239	New Jersey ARNG, NJ
370	Presidio of Monterey, CA	5	North Carolina ARNG, NC
68	USAG Grafenwohr, Germany	149	USAG Hohenfels, Germany
226	USAG Hawaii, HI	330	USAG Kaiserslautern, Germany
124	USAG Kaiserslautern, Germany	Wind	
1,400	USAG Livorno, Italy	275	Fort Buchanan, Puerto Rico
1,183	USAG Vicenza, Italy		
Wind			
1	Fort Benning, GA		
1	Fort Knox, KY		

Source: OASA(IE&E), data made publicly available in ASR14.

also awarded 2.7 MW of renewable electric generation in FY13 through ECIP.²⁸ The EITF serves as the central management office for partnering with Army installations to implement large-scale (greater than 10 MW) renewable energy projects. The EITF is accelerating development toward the Army’s 1 GW in large-scale renewable energy projects by developing third-party-financed projects using biomass, solar, combined heat and power, and biodiesel.²⁹

Vehicle Fuel

The Army’s non-tactical vehicle (NTV) fleet includes vehicles used for maintenance and administration, as well as transporting Soldiers and Army Civilians across installations or to training sites. This fuel use is subject to federal fuel reduction goals. The DoD SSPP goal is to reduce the use of petroleum by 30 percent from FY05 to FY20. The Army is committed to reducing petroleum usage in NTVs by rightsizing its fleet and using fuel-efficient vehicles, electric and hybrid technologies, and emerging alternative fuels.

The Army cut NTV petroleum use by 32.9 percent as of the end of FY13—hitting the FY20 target 7 years early.³⁰

The Army also has increased its use of alternative fuel in NTVs. The federal goal is to increase alternative fuel use each year by 10 percent, which the Army exceeded in FY13 with a 37.1 percent

increase over FY12. Since FY05, the Army has increased its alternative fuel use dramatically — by 1,632 percent.³¹

Greenhouse Gases

GHGs are gases that trap heat in the Earth’s atmosphere, contributing to climate change. EO 13514 requires all federal agencies to establish goals for reducing GHG emissions. The DoD SSPP goals are to reduce Scope 1 and 2 emissions by 34 percent, and Scope 3 emissions by 13.5 percent, from FY08 to FY20.

The Army’s Scope 1 emissions include energy fuels, such as natural gas, combusted at facilities to generate heat or run operations. Scope 1 also includes fuel used to operate vehicles and other equipment, and leaks from refrigeration or cooling equipment. Scope 2 emissions result from the use of purchased electricity or steam — the emissions occur at the utility provider but directly result from the Army’s energy use. As of FY13, the Army had reduced Scope 1 and 2 emissions by 4.8 percent from FY08. Table 4 shows GHG emissions.

Scope 3 emissions are much broader — and harder to quantify. Scope 3 emissions include employee commuting, business travel, solid waste disposal, contracted wastewater treatment, and losses from electricity transmission and distribution through the grid. As of FY13, the Army had reduced Scope 3 emissions by 4.3 percent from the FY08 baseline.

The Army’s energy, waste, and other resource conservation program and

policies reduce Scope 1 and 2 sources. To address Scope 3 sources, the DoD SSPP targeted reductions in two readily quantifiable sources of emissions — commuting and employee air travel. The goal for reducing emissions from commuting is for 30 percent of eligible employees to regularly telework at least once biweekly by FY20. Army senior leadership is enhancing the information technology infrastructure to improve the access to telework for Civilian and military employees. Data are not yet available on this initiative.

The goal for employee business air travel is to reduce total GHG emissions by 7 percent from FY11 to FY20. From FY11 to FY13, the Army reduced GHG emissions associated with employee business air travel by 29.8 percent, meeting its goal 7 years early.

Climate Change Adaptation

Although the Army is mitigating its contribution to climate change by reducing GHG emissions, it recognizes that making climate change-informed decisions can reduce its long-term vulnerability to its effects.

The 2010 Quadrennial Defense Review (QDR) laid the foundation for DoD and Army strategic policy on climate change adaptation.³² The 2010 QDR set a long-term course for DoD as it assesses the threats and challenges the nation faces and rebalances DoD’s strategies, capabilities, and forces to address conflicts and threats. The 2010

Table 4. GHG Emission Reductions

Metric	Units	Baseline (FY08)	FY10	FY11	FY12	FY13
GHG Emissions—Scope 1 and 2	Million MTCO ₂ e	9.6	10.7	9.8	9.4	9.2
GHG Emissions—Scope 3	Million MTCO ₂ e	2.9	3.0	3.2	2.9	2.8

Source: DoD, Department of Defense Sustainability Performance Report, FY 2014. (Report not released as of publication of ASR14. Data made publicly available in ASR14.)

QDR acknowledged that climate change has national security implications, which DoD and its partners must address.³³

“Climate change and energy are two key issues that will play a significant role in shaping the future security environment. Although they produce distinct types of challenges, climate change, energy security, and economic stability are inextricably linked. The actions that the Department takes now can prepare us to respond effectively to these challenges in the near term and in the future.”

—2010 Quadrennial Defense Review

The 2014 QDR expanded DoD’s focus on climate change, recognizing it may increase the frequency and complexity of future missions, as well as affect DoD’s training capacity and installations.³⁴

To maintain readiness in a changing climate, the Army undertook efforts to assess its vulnerability to climate change. In FY13, it completed the *High-level Climate Change Vulnerability Assessment*,³⁵ which identified potential regional effects on mission activities, infrastructure, and training lands. The Army is also developing a framework to integrate climate change considerations into existing installation-level plans.³⁶

Water

Soldiers need water to drink, and the Army needs it for the production of materiel, making it a critical resource in everyday Army operations. The Army is increasing its water security by reducing water use, assessing water supply vulnerability, complying with applicable regulations, improving efficiency, and reusing water to the extent feasible.

Army facilities used 34.3 billion gallons of water in FY13. The Army is ahead of the DoD SSPP goal to reduce potable water consumption intensity 26 percent from FY07 to FY20, reaching a 26.6 percent reduction in FY13 (up from 25.4 percent in FY12).³⁷ Table 5 shows the Army’s progress in reducing its potable water use.

The Army is investing capital to repair leaks from aging water distribution systems. Some projects save 2 to 3 million gallons per year. It is also investing in cooling tower improvements. Scranton Army Ammunition Plant is treating oily wastewater and reusing it in its cooling towers. Funded by the installation’s operating contractor, this project has reduced potable water use by 1 million gallons per year.³⁸ Army-wide, new construction and major renovations of facilities are being designed to harvest rainwater and utilize xeriscaping where practicable.³⁹

The DoD SSPP also established a goal to reduce industrial, landscaping, and irrigation water use by 20 percent from FY10 to FY20. The Army is working

to create a representative baseline for FY10, but many installations do not have individual meters for industrial, landscaping, or irrigation water. In FY13, Army installations reported 13.4 billion gallons of nonpotable water use. To achieve the DoD goal, the Army is reducing outdoor water use through better site design and landscaping and identifying “purple pipe” strategies to use reclaimed or recycled water for nonpotable purposes.⁴⁰

Solid Waste

Army installations generate solid waste from housing, offices, construction and demolition (C&D), and various industrial and maintenance facilities. The Army is reducing waste sent to landfills by generating less and reusing or recycling materials. By making informed decisions in the procurement process, the Army also strives to purchase durable and recyclable goods, reusing or recycling them rather than sending them into the waste stream. In FY13, the Army generated 1.98 million tons of solid waste, down from 2.23 million tons in FY12. The Army also reduced the per capita generation rate to 2.1 lbs/person/day.⁴¹

Improved collection and recycling programs cut waste disposal costs and generate revenue — \$36.9 million in FY13 — that funds operations and improves the quality of life of Soldiers and Families. Fifty percent of proceeds from recycling directly support the installation Morale, Welfare, and Recreation programs.

Table 5. Reductions in Potable Water Use

Metric	Unit	Baseline (FY07)	FY10	FY11	FY12	FY13
Installation potable water consumption	Billion gallons	45.3	41.9	42.0	35.5	34.3
Water intensity	Gal/GSF	57.6	48.8	51.7	43.0	42.3

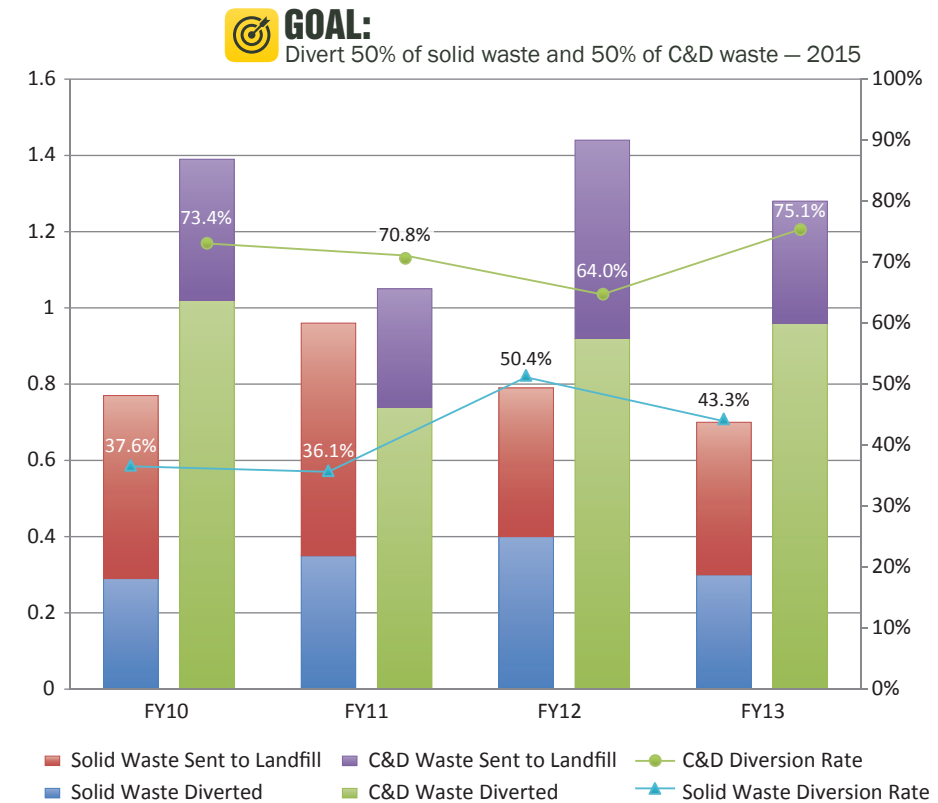
Source: DoD, Department of Defense, *Annual Energy Management Report*, Fiscal Year 2013, June 2014, www.acq.osd.mil/ie/energy/energygmt_report/FY%202013%20AEMR.pdf.

Figure 5 shows the Army's progress in diverting solid waste and C&D waste from landfills. In FY13, the Army diverted about 304,000 tons of solid waste from landfills and 957,000 tons of C&D debris for reuse — 43 percent of solid waste and 75 percent of C&D waste.⁴² While the Army's end goal is Net Zero waste, it is progressing toward the DoD goal to divert 50 percent of non-hazardous solid waste and is exceeding the goal to divert 60 percent of C&D debris from the waste stream by FY15.

The Army recycles more than cans, paper, plastic, and glass. It collects and reuses or recycles electronics, scrap metal, cardboard, wooden shipping crates, and other materials. The Army properly disposes of old or surplus electronics in accordance with EO 13514, using the Defense Logistics Agency's Disposition Services. Army installations also compost landscaping wastes. In FY13, it tripled the amount of composted material to 34,358 tons.⁴³

Hazardous Waste and Toxics

The production of materiel and the operation and maintenance of combat, support, and service systems



Source: DoD, Department of Defense Sustainability Performance Report, FY 2014. (Report not released as of publication of ASR14. Data made publicly available in ASR14.)

Figure 5. Diversion of Solid Waste and C&D Waste from Landfills, FY10–13

use hazardous materials and generate hazardous waste. The Army's installations (including ranges, depots, arsenals, and industrial plants) strive to reduce the total

amount of hazardous chemicals used, lower the hazardous waste generated, and improve the management of these materials and wastes. By doing so, the



Fort Hood — Making Progress Toward Net Zero Waste

Fort Hood (a pilot Net Zero waste installation) received a Secretary of the Army environmental award for its Net Zero Waste program and single stream recycling. It has increased solid waste diversion from 20 to 48 percent and collected 16 tons of recyclable materials. Fort Hood generated more than \$2.9 million from recycling and turned in more than \$1.5 million in excess materials—75 percent of which was reissued or recycled.

Photo: Recycle Shredding—Fort Hood Soldiers shred documents at the Fort Hood Recycle Center, Fort Hood, TX (photo: Christine Luciano, Fort Hood).

Army reduces associated health and safety risks, as well as the financial, regulatory, and logistical burdens associated with managing hazardous materials and wastes.

Table 6 shows the Army’s releases of toxic chemicals, as reported on a calendar year (CY) basis in the Toxics Release Inventory (TRI). In CY12, the Army’s releases totaled 17 million pounds, down 6.8 million pounds from CY06. These data are accessible through the TRI Explorer (www.epa.gov/triexplorer), which includes information about routine and accidental releases (chemicals emitted to the air or water, or placed in some type of land disposal). Examples of TRI releases include nitrate compounds, copper, lead, lead compounds, ethylene glycol, zinc, methylene chloride (MeCL), hydrochloric acid, copper compounds, and aluminum.

The Army also has established goals to reduce use of toxic chemicals in critical weapon systems and related sources. The *Army Toxic Chemical Reduction Plan* targets three chemicals for reduction: trichloroethylene (TCE), MeCL, and hexavalent chromium. The plan targets reductions in specific applications of these chemicals for significant industrial Army users.⁴⁴ The Army established reduction targets of 15 percent for the use of TCE and MeCL between 2010 and 2013.

In 2007, Anniston Army Depot represented 94 percent of the Army’s total use of MeCL. In 2012, Anniston replaced MeCL paint strippers with an alternative,

which reduced its use of this toxic by 96 percent. Anniston also reduced its use of TCE — 86 percent of the Army’s entire use — by 91.3 percent from 2007 to 2013 by modifying its processes and identifying alternative products.⁴⁵

The Army disposed of 66.9 million pounds of hazardous waste in CY11 and 36.3 million pounds in CY12, reductions of 11.6 percent from CY10 to CY11 and 45.6 percent from CY11 to CY12. Reductions in hazardous waste generation reflect mission and process changes at several installations, deployments, and restructuring and closures of installations in Europe, in addition to the Army’s ongoing efforts to reduce the generation of hazardous waste.

Green Procurement

The first step in reducing waste is to procure more durable products or those that can be reused, recycled, or composted. The Army’s green, or sustainable, procurement goal is to prevent pollution through preferential use of products and services that use recycled or biobased materials and that are energy and water efficient, environmentally preferable, non-ozone depleting, and free from toxic chemicals. The Army monitors its procurement performance by reviewing contracts for compliance with sustainable acquisition requirements. The Army evaluated 100 contract actions annually in FY12 and FY13 and found appropriate sustainable

acquisition language in 89 and 86 percent of the contracts, respectively.⁴⁶

Sustainable Design and Development

All of the elements of sustainable installations — energy, water, GHG emissions, waste, and procurement — are part of the sustainable design and development (SDD) concept. SDD is an integrated approach to siting, designing, building, and operating a facility that considers energy, GHGs, water, waste, and occupant health. For the Army, SDD means building cost-effective and energy-efficient buildings that are high performing throughout their life cycle.

SDD Policy

The Army issued its first SDD policy in 2001. Its January 2006 SDD policy update required that new construction and major renovations be ‘certifiable’ under the US Green Building Council’s Leadership in Energy and Environmental Design (LEED) rating system, although actual certification was not required until the January 2010 SDD policy update. As of FY13, the Army had 360 LEED-certified projects, some with multiple buildings.

ASHRAE (the American Society of Heating, Refrigerating, and Air Conditioning Engineers) develops many of the leading standards in building science, and the Army continues to revise its SDD policy as requirements

Table 6. Reductions in Releases and Transfers of Toxic Chemicals

Metric	Units	Baseline (CY06)	CY09	CY10	CY11	CY12
On-site releases and off-site transfers of toxic chemicals	Million lbs	23.9	23.3	21.6	21.8	17.0

Note: CY13 data not available at time of publication of ASR14.

Source: DoD, *Department of Defense Sustainability Performance Report*, FY 2014. (Report not released as of publication of ASR14. Data made publicly available in ASR14.)

and new standards arise. EPAAct05 requires the Army to build facilities that exceed ASHRAE Standard 90.1-2007 for energy efficiency. In its January 2010 SDD policy update, the Army required new construction and major renovation projects to be designed to the ASHRAE Standard 189.1, in addition to certification with LEED. In December 2013, the Army incorporated Net Zero energy, water, and waste concepts into its SDD policy and extended the policy's applicability to aspects of horizontal construction.⁴⁷

The Army's SDD policy also requires facilities to comply with low-impact development and stormwater management requirements. The Army requires development and redevelopment projects that involve 5,000 square feet or more to maintain pre-development hydrology to the maximum extent technically feasible.⁴⁸

Along with most federal entities, the Army is evaluating how best to meet the federal requirement that 15 percent of existing buildings conform to the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*⁴⁹ by FY15. As of the end of FY13, 2 percent of the Army's inventory was designated as high performance sustainable buildings. This falls short of the federal FY13 target of 11 percent; however, the Army manages more than 165,000 buildings, making quick implementation of high performance standards a challenge under the current budget.⁵⁰

Real Property Master Planning

Effective long-term development and management of Army lands requires a comprehensive and collaborative planning process at the installation level

to develop and maintain a real property master plan (RPMP). In FY12 and FY13, the Army issued new guidance to incorporate SDD policy requirements into RPMPs, reflect key strategies in the DoD Unified Facilities Criteria, and incorporate other principles including energy planning, sustainable planning, and low impact development. Through such updates, the Army RPMP process provides a means for sustainable and energy-efficient installation development that supports mission requirements and responds to changing land constraints.

Land Management

The Army's land management practices support its test and training requirements to ensure unit readiness. Encroachment, or changing land use patterns surrounding installations, can

Ensuring Sustainable Training Lands at Fort Campbell



Fort Campbell's Land Rehabilitation and Maintenance (LRAM) efforts ensure sustainable and safe maneuver training by creating stable maneuver surfaces for training units, Fort Campbell, KY (photo: Fort Campbell Integrated Training Area Management (ITAM) Program).

The LRAM component of ITAM repairs, maintains, and reconfigures Army training lands to meet mission training needs. As part of land management, Fort Campbell keeps its maneuver areas safe and sustainable. Soils associated with heavily used maneuver paths become loosely bound and require stabilization treatments to ensure Soldier safety and training sustainability. Fort Campbell's LRAM team stabilizes commonly used maneuver paths to create tactical-use maneuver trails by grading them, applying gravel over the surfaces, creating shallow ditch lines with check dams, grading the shoulders, and applying mulch and grass seed along the shoulders to stabilize soils.



Camp Shelby Innovation Expands Army Compatible Use Program (ACUB) Program

In December 2013, Camp Shelby announced the protection of 1,522 acres of land through the ACUB program. This buffer zone will help Camp Shelby maintain training capabilities and preserve natural resources. It will be placed into conservation through the Compatible Lands Foundation, Camp Shelby's ACUB partner. A forest carbon project, the first DoD project of its kind, will be established on a portion of the land.⁵¹

Commander Col. Smith signs the ACUB agreement, December 31, 2013 (photo: US Army. www.hattiesburgamerican.com/article/20131231/NEWS01/312310006).

limit the Army's use of these lands. In addition, protected species, habitat, and cultural resources on installations may necessitate special management practices to ensure continued access to lands and protection of these resources.

Sustainable Range Program

Army ranges across the country support test and training requirements. The Sustainable Range Program (SRP) is the Army's approach to supporting DoD's Sustainable Ranges Initiative. The three pillars of the SRP — capability, availability, and accessibility — drive best management practices for range operations and training area management.⁵² Range Modernization, Range Operations, and the Integrated Training Area Management (ITAM) program make up SRP.

The Army faces many critical issues that affect range capabilities, including encroachment. Despite these challenges, it has maintained range capabilities at levels that support readiness.⁵³ The Army increased its capability and encroachment scores from FY11 to FY12 (8.97 to 9.17 and 9.18 to 9.19, respectively), improving the suitability and accessibility

of training lands. A score of 10 (based on an average assessment of all Army ranges) is the maximum possible rating, indicating full mission capability or minimal encroachment risk. The *2013 Report to Congress on Sustainable Ranges* provided validated range capability and encroachment assessments.⁵⁴

Training land and ranges allow the Army to prepare land forces to support DoD critical joint force missions. To meet mission, training, and range objectives, the Army has developed multiple systems, programs, and processes, including the Army Force Generation model, home station training, and Regional Collective Training Capability, among others.⁵⁵ (To learn more about them, and the Army's SRP, see the reports to Congress on sustainable ranges at www.denix.osd.mil/sri/Policy/Reports.cfm.)

Army Compatible Use Buffer Program

Encroachment is the changing pattern of land use and habitat growth that restricts the Army's ability to operate its installations and training areas. It also is an issue for the communities outside the fence line,

which can be affected by noise and other consequences of Army activities.

Through its Readiness and Environmental Protection Initiative (REPI), DoD partners with conservation organizations, state governments, and local governments to acquire easements surrounding installations.⁵⁶ The Army carries out its REPI authority through the ACUB program.⁵⁷ Under the ACUB program, the Army works with partners to establish conservation easements that restrict the use of off-post buffer land around critical installations and ranges to ensure their continued access and use. Although the Army may contribute funds for the partner's acquisition of perpetual easements or other real property interests in such buffer lands, the ACUB program does not actually acquire new land for Army ownership.⁵⁸ These buffers also support the preservation of essential natural resources and habitats.

The Army continued to make strides through the ACUB program, increasing the amount of protected acreage surrounding 28 Army installations to 207,528 acres in FY12 and 231,562 acres in FY13.⁵⁹ Since FY03, these privately held buffer properties, which have the

added benefit of aiding conservation efforts, have been implemented using a combination of DoD funds (\$352 million) and conservation partner investments (\$292 million).⁶⁰

Natural Resources

As a federal entity, the Army is required by the Endangered Species Act (ESA) to conserve federally listed threatened and endangered species (TES) on the lands where the Army trains Soldiers, tests weapons, and performs other essential functions. The Army actively monitors and manages these species and their habitats to avoid conflicts. In FY13, the Army spent \$40 million on ESA compliance activities.⁶¹ The actions required to protect TES and ensure the Army optimizes the conservation of its natural resources are laid out in installation-level integrated natural resource management plans (INRMPs). INRMPs are an installation's primary guide to land management. The Sikes Act requires DoD to prepare and implement an INRMP for each installation with significant natural resources.⁶²

Each plan is an agreement between the Army, the US Fish and Wildlife

Service, and external stakeholders, including state fish and wildlife agencies. The Army tracks and maintains INRMPs to ensure the installations manage their lands to sustain the mission while providing for the stewardship of and continued access to Army lands. The number of installations with compliant INRMPs increased from a 10-year low of 59 percent in FY10 to 96 percent in FY12 and 97 percent in FY13. Increased command attention and funding have improved INRMP compliance rates.⁶³

Through its Conservation Reimbursable Program, the Army manages millions of acres for forestry, agriculture/grazing, and fish and wildlife conservation. The revenue generated annually from leases and sales under these self-supporting programs are used to manage lands, fund conservation projects, and administer programs. The Conservation Reimbursable Program shapes and protects the landscape to enhance its ability to support the installations' missions.

Cultural Resources

Cultural resources include historic properties, cultural items, archeological resources, sacred sites, and archeological collections as defined in federal laws such as the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, and Archaeological Resources Protection Act.⁶⁴

The Army values and protects the wide variety of cultural resources on its installations and lands (see inset).⁶⁵ Installations have integrated cultural resource management plans (ICRMPs) to protect cultural resources and identify and resolve possible conflicts between these resources and the mission. Of 126 Army installations requiring ICRMPs in FY12 and FY13, the Army improved from 70 certified ICRMPs (55.6 percent) in FY12 to 83 certified ICRMPs (65.9 percent)

Cultural Resource Management at Army Installations

- 81,692 archeological sites
- 68,388 historic buildings
- 21 National Historic Landmarks
- 81 Native American Sacred Sites
- 21,730 cultural items repatriated to federally recognized Native American tribes

Source: OASA(IE&E), Army environmental program data (Data made publicly available in ASR14).

in FY13. This is down from the nearly 98 percent completion rate in FY10. The majority of these installations (98 percent) have ICRMPs, but in FY13, only 65.9 percent of them were certified by the installation commander within the last 5 years, making them incomplete. Since FY11, timely updates of ICRMPs have posed a challenge to the Army, given the current funding climate and the lack of a statutory requirement for the plans.

Integrated Pest Management

Pests (such as ticks and other insects, weeds and invasive plants, and rodents) can damage facilities and affect the health and morale of Soldiers and Families. Conventional approaches to pest management rely on heavy application of hazardous pesticides, but the Army uses an integrated pest management (IPM) approach: "a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks."⁶⁶ Under IPM,

Natural Resources Management at Army Installations

- Nearly 13.5 million acres of land
- 116,480 acres of ESA critical habitat
- 192 TES
- 27 species considered for new listing under the ESA
- 145 Sikes Act driven INRMPs

Source: OASA(IE&E), Army environmental program data (data made publicly available in ASR14).

an installation takes measures to operate and maintain facilities by monitoring and controlling pests so that chemical use is minimal. Pesticides are applied only if they are found to be the best method of controlling pests, considering safety, cost, and effectiveness.

To ensure proper execution of its IPM approach, the Army requires 100 percent of Army personnel and contractors who apply pesticides to be certified. In FY12 and FY13, 100 percent of pesticide applicators were certified.⁶⁷

A key element in maintaining IPM is preparing integrated pest management plans (IPMPs) and having pest management professionals review and update them annually. DoD-certified pest management consultants previously approved IPMPs for all Army installations, and pest management professionals reviewed and updated 100 percent of Army IPMPs in FY12 and FY13. At the time of the FY13 end-of-year data call, all Army IPMPs had been reviewed and updated. However, DoD-certified pest management consultants had reviewed and approved only 84 percent of the IPMPs; approvals of the remaining 16 percent were pending.⁶⁸

Compliance

The Army strives to comply with all applicable federal, state, and local environmental laws and regulations for air, water, and waste and other media areas. It has established a comprehensive environmental compliance program to meet the requirements of various environmental statutes, including the Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA), National Environmental Policy Act, Solid Waste Disposal Act, and others. The Army also strives to comply with the applicable DoD environmental requirements at overseas installations. Worldwide, the Army

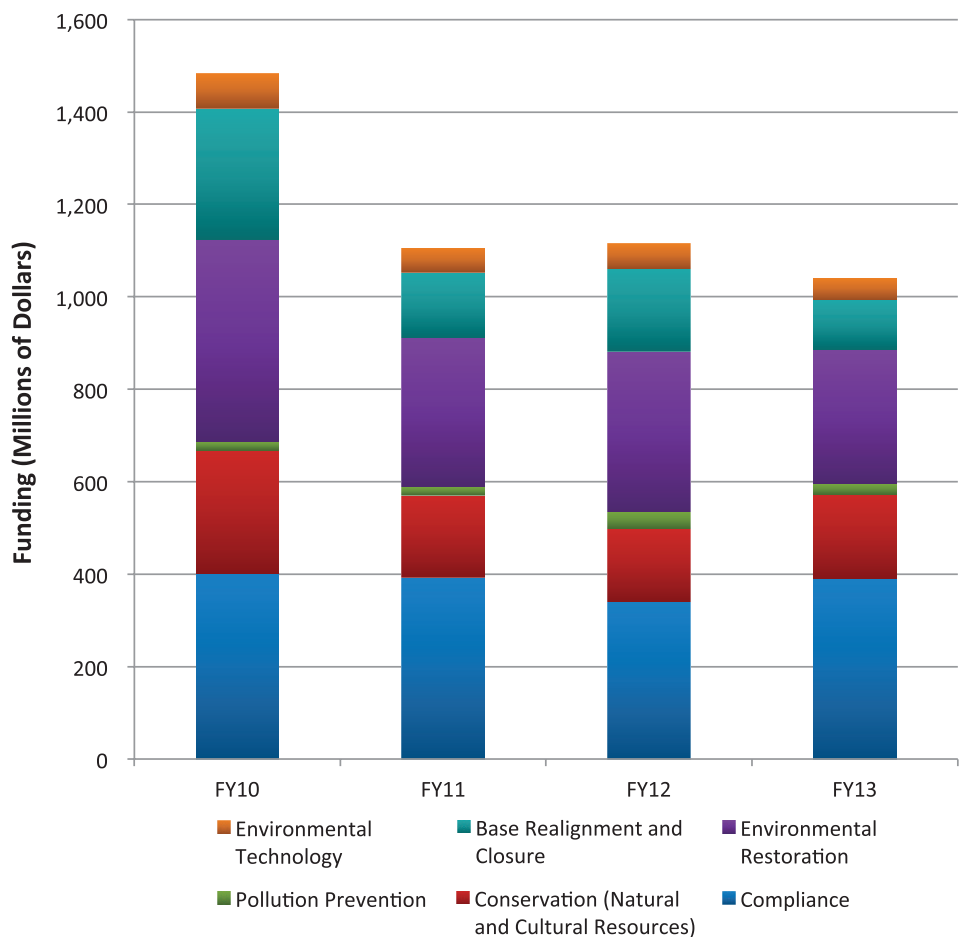
maintains nearly 2,200 environmental permits. By ensuring Army operations, activities, and installations comply with applicable environmental requirements, the Army environmental compliance program not only works to protect the environment but ensures the continuity of Army operations.⁶⁹

Environmental Program Funding

To support compliance and proactive environmental management, the Army maintains environmental programs that cover pollution prevention, conservation (natural and cultural resources), compliance, environmental technology, environmental restoration (the cleanup

of formerly contaminated sites), and Base Realignment and Closure (BRAC) environment results. Figure 6 shows environmental program funding in FY10–13. In FY12 and FY13, the Army allocated \$1,114.4 million and \$1,039 million. Additional projects that reduce energy, water, and other infrastructure spending are not included under the environmental program budget.

(For additional information on Army and DoD environmental funding, see the most recent and historical Defense Environmental Programs Annual Reports to Congress at www.denix.osd.mil/arc/Index.cfm.)



Sources: DoD, *Fiscal Year 2012 Defense Environmental Program Annual Report to Congress*, November 2013, www.denix.osd.mil/arc/ARCFY2012.cfm. DoD, *Fiscal Year 2013 Defense Environmental Program Annual Report to Congress*. (Report not released as of publication of ASR14. Data made publicly available in ASR14.)

Figure 6. Environmental Program Funding, FY10–13

Environmental Management Systems

The Army continues to pursue its goal of effectively maintaining environmental management systems (EMSs) at its installations to identify significant impacts on the environment, implement solutions, and track progress. The Army's EMS approach is based on the International Organization for Standardization standard 14001. The Army also follows DoD Instruction 4715.17, *Environmental Management Systems*, which includes a requirement to externally audit EMSs every 3 years.

In FY13, 85 of the 140 designated appropriate facilities for EMS implementation were considered fully implemented, compared with 115 of the 141 designated appropriate facilities

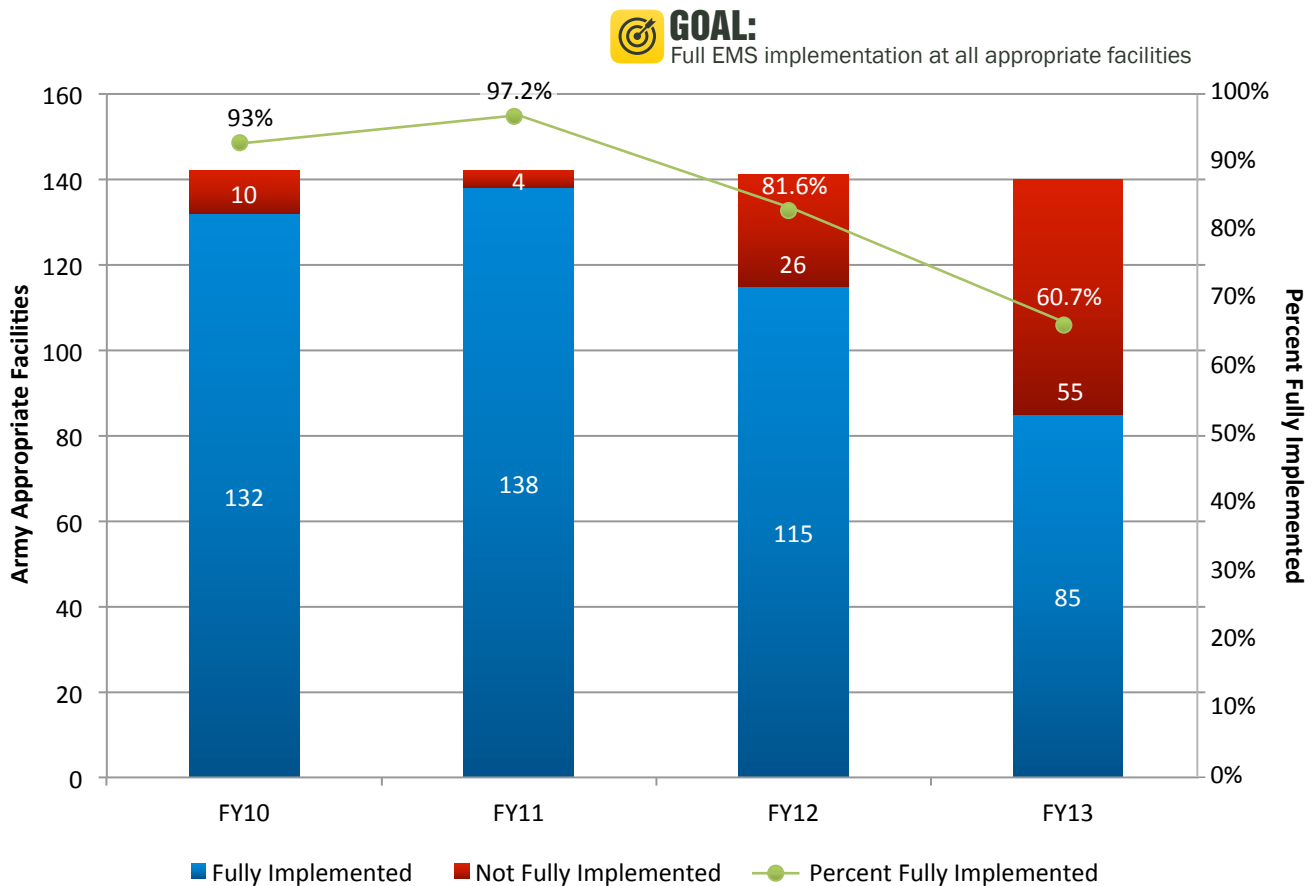
in FY12.⁷⁰ The DoD SSPP goal is 100 percent. Full implementation requires an external EMS audit. Audits declined in FY13 as a result of Army budget guidance to reduce costs in designated programs.⁷¹ See Figure 7 for EMS implementation status.

Despite a decrease in fully implemented EMSs, the percentage of Army EMSs rated green (per the DoD SSPP EMS metric) increased from 35 percent in FY12 to 50 percent in FY13.⁷² In August 2012, the Office of the Assistant Chief of Staff for Installation Management (OACSIM) released EMS policy guidance to Army commands that emphasized a renewed focus on EMSs. It also clarified EO 13514 requirements for EMS language in contracts and concessionaire agreements,

leading to a significant improvement in this metric and helping drive the increase in green-rated EMSs.⁷³

Recognizing Achievements in Sustainability

Each year, the Army recognizes individuals, teams, and installations for their environmental efforts and achievements through awards like the SecArmy Environmental Awards and SecArmy Energy and Water Management Awards. Similarly, since 1962, SecDef has honored individuals, teams, and installations for outstanding achievements in DoD environmental programs. Table 7 shows SecArmy recipients for FY12 and FY13 that went on to receive SecDef Environmental Awards in their respective category.



Source: OACSIM, Army environmental quality program data (data made publicly available in ASR14).

Figure 7. EMS Implementation Status, FY10–13

Table 7. FY12–13 Army Recipients of SecDef Environmental Awards

FY12 Recipients	FY13 Recipients
Sustainability, Industrial Installation: Scranton Army Ammunition Plant, PA	Sustainability, Individual/Team: Dorenda Coleman, Arizona ARNG, AZ
Environmental Quality, Non-Industrial Installation: Fort Hood, TX	Environmental Excellence in Weapon System Acquisition, Small Program: Counterfeit Refrigerant Impact Team, Tank Automotive Research, Development and Engineering Center, Detroit Arsenal, MI
Natural Resources Conservation, Individual/Team: Oahu Army Natural Resource Team, USAG Hawaii, HI	Environmental Restoration, Installation: Directorate of Public Works, USAG Aberdeen Proving Ground, MD
Environmental Quality, Individual/Team: Fort Hood Recycle Team, Fort Hood, TX	
Environmental Excellence in Weapon System Acquisition, Team: Stryker Brigade Combat Team - Warren, MI	

Source: DoD Energy, Environment, Safety and Occupational Health Network and Information Exchange, 2014 Secretary of Defense Environmental Awards, www.denix.osd.mil/awards/index.cfm.

Tables 8 and 9 show Army energy award recipients for FY12 and FY13. Table 8 presents SecArmy energy award recipients for FY12 and FY13. Table 9 presents Army recipients of DOE Federal Energy and Water Management Awards for FY12 and FY13.

Table 8. FY13 SecArmy Energy Award Recipients

Category	Recipients
Small Group	Energy Efficiency/Energy Management: Aberdeen Proving Ground, MD; Fort Knox, KY; and Presidio of Monterey, CA
Installation	Energy Efficiency/Energy Management: Fort Bragg, NC and Red River Army Depot, TX
Individual	Energy Efficiency/Energy Management: Mr. Ian Donegan (Office of the Chief, Army Reserve)
Exceptional Performance	Demand Side Management/Load Shedding: Picatinny Arsenal, NJ Innovative/New Technology: Fort Knox, KY Renewable/Alternatives: Army National Guard, NJ

Source: Army, Secretary of the Army Energy and Water Management Awards, www.army-energy.hqda.pentagon.mil/awards/sec_army.asp.

Table 9. FY12–13 Army Recipients of Federal Energy and Water Management Awards

FY12 Recipients	FY13 Recipients
Project (LEED Platinum Facility): Fort Bragg, NC	Team Program: Fort Carson, CO
Project (Leak Detection): Tobyhanna Army Depot, PA	Director's Award: Fort Carson, CO
Project (ESPC Contract Implementation): Fort Bliss, TX	Individual – Exceptional Service: Ms. Christine Hull, Fort Bragg, NC

Source: DOE, 2013 Federal Energy and Water Management Award Winners, www.energy.gov/eere/femp/2013-federal-energy-and-water-management-award-winners. DOE, 2012 Federal Energy and Water Management Award Winners, www.energy.gov/eere/femp/articles/2012-federal-energy-and-water-management-award-winners.

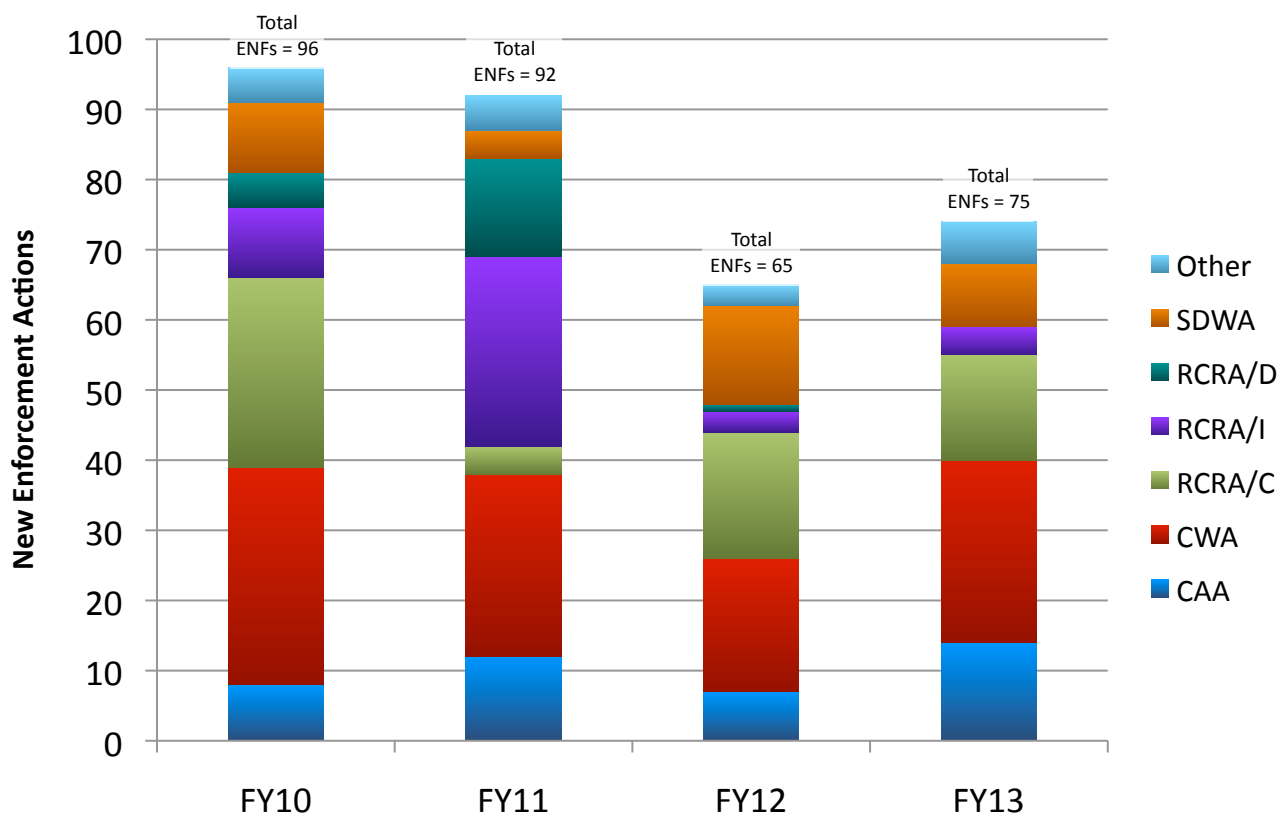
Environmental Enforcement Actions

EMSs and other environmental best management practices proactively address environmental compliance. However, installations occasionally incur environmental enforcement actions (ENFs) and fines for noncompliance. In such instances, they work to quickly implement corrective actions and resolve deficiencies, following up to identify root causes and prevent reoccurrence.

Figure 8 identifies the number of new ENFs by environmental statute.

New ENFs issued to Army installations, including overseas installations, decreased from more than 90 in FY10 and FY11 to 65 in FY12. As a percentage of total inspections, this is a decrease from 10.5 percent and 14.0 percent (in FY10 and FY11, respectively) to 9.1 percent in FY12. However, new ENFs increased slightly

to 75 (11.4 percent of total inspections) in FY13. In FY12 and FY13, CWA and hazardous waste ENFs were most common, followed by CAA-related ENFs. The remaining ENFs were associated with other regulatory programs. Fines and penalties assessed totaled \$234,260 in FY12, while FY13 fines and penalties increased slightly to \$238,590.⁷⁴



Source: OACSIM, Army environmental quality program data (data made publicly available in ASR14).

Figure 8. Number of New ENFs by Statute, US and Territories, FY10–13

Sustainability in Operations

*In FY13, the Army had more than 168,000 Soldiers deployed and forward stationed in nearly 150 countries worldwide.*⁷⁵

Beyond combat operations, the Army conducts many missions worldwide in support of national security objectives. These commitments include maintaining deployable contingency forces and forward-based capabilities; conducting multilateral exercises with partners and allies; building and maintaining critical logistical, communications, intelligence, medical, and transportation infrastructure; collecting intelligence; and providing humanitarian assistance. Figure 9 depicts the numbers and locations of Soldiers deployed and forward stationed in 2013.

Sustainability principles apply to these operations just as they do

to permanent Army installations. Military operations outside the United States often take place in austere environments, sometimes with limited access to local or regional resources. At the operational level, long supply chains constrain the Army's ability to project force in support of national objectives and hamper mission completion. At the tactical level, energy and water constrain a unit's endurance and limit flexibility and freedom of action. The mounted and dismounted forces rely on a routine, predictable resupply of fuel, water, and batteries, which trades sustainment for momentum, exposes Soldiers to tactical risks, and limits commanders' options.

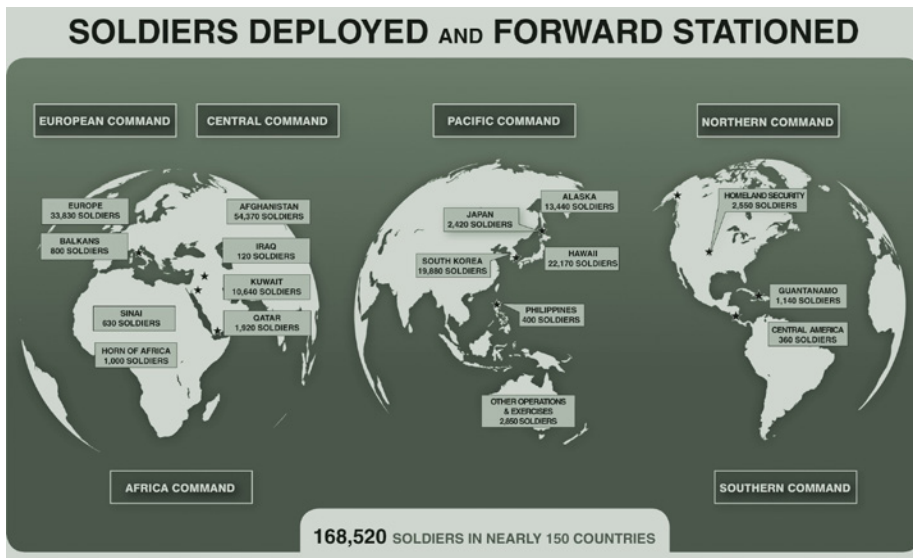
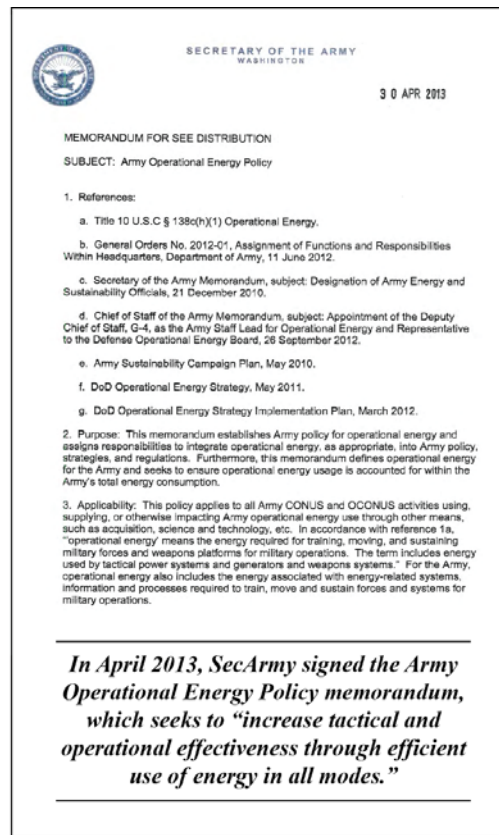


Figure 9. Worldwide Reach of Soldiers Deployed and Forward Stationed in FY13



The Army has identified the essential capabilities necessary to improve sustainability in operations and contingency basing and is pursuing approaches to close those gaps. Efforts are underway to integrate energy and sustainability considerations in training doctrine, manning, and equipment.

To enforce the importance of sustainability in operations, the 2013 *Army Strategic Planning Guidance (ASPG)* directs the Army to “reduce operational energy and water requirements, develop operationally viable alternative energy sources and increase water reuse.” The ASPG is the highest-level army guidance and Section I of the *The Army Plan*.⁷⁶

In the 2013 *Army Equipment Modernization Strategy*,⁷⁷ the vision is to “ensure that ... Soldiers have the right equipment, for the right missions, at the right time by procuring versatile and tailorable equipment that is affordable, sustainable and cost effective.”

Sustainability in operations is Army policy, reflected in both the 2011 *Army*



THE POWER IS
IN YOUR HANDS



ENERGY + BASING

THE WARFIGHTER ADVANTAGE

*Policy for Establishing, Managing, and Transitioning Contingency Bases*⁷⁸ and the 2013 *Army Operational Energy Policy*.⁷⁹ Contingency bases are defined locations, in which the Army protects and sustains forces and from which it projects combat power. Operational

energy is “the energy and associated systems, information, and processes required to train, move, and sustain forces and systems for military operations.”

Sustainability is a component of the Operational Energy and the Contingency Basing programs. They are not

“sustainability programs” or “demand reduction initiatives” but a holistic attempt to generate combat effectiveness through the informed use of resources and application of standards. These programs focus on operational effectiveness in four domains: Dismounted Maneuver — the Soldier, Mounted Maneuver, Aerial Maneuver, and Contingency Basing.

Dismounted Maneuver — The Soldier

The dismounted Soldier who went to war in 2001 and 2003 looked a lot like the Soldier who went to war in 1991, and not very different from the Soldier in Vietnam. Since then, the Army has fielded capabilities to Soldiers that make them significantly more capable than their predecessors. However, a price was paid in terms of weight, range, endurance, and especially power demands. The Army set a goal for the dismounted Soldier to have 72-hour endurance without resupply of batteries at a weight of 6.3 pounds. In the past 2 years the Army has made progress, successfully reducing that 72-hour battery load from 13.3 pounds to 8.9 pounds, simplifying Soldiers’ power supply and giving them ways to resupply power themselves while on the move. Future work will focus on simplifying and reducing Soldier power demands through miniaturization and standardization, by combining capabilities into single devices, or via better-informed choices made by small unit leaders on the capabilities they need to conduct a mission.

The Army’s Project Manager Soldier Warrior is developing, acquiring, and fielding expeditionary power solutions that reduce Soldier load and increase mobility and endurance for dismounted operations. Central power storage (a conformal battery in the Soldier’s plate carrier pocket) and a means to distribute

power to personal equipment assure the Soldier that the devices worn are fully charged when needed. The battery holds a 24-hour supply of energy, after which it can be recharged with a solar panel or by other means the squad has to scavenge power on the battlefield. That frees the dismounted squad on patrol from relying on frequent resupply of batteries by air drop, ground vehicles, or other traditional logistics resupply. In FY13, this equipment was fielded to five brigades, and six will receive the upgraded equipment set and associated training in FY14.

Mounted Maneuver

Many mounted platforms are based on design choices made in the 1960s and 1970s and acquired in the 1970s and 1980s. Since then, the Army has added numerous protection and mission command capabilities to these platforms, with some unintended consequences including decreases in mobility and reliability. Unfortunately, the power systems in these vehicles are at their limit and do not have sufficient power reserves to incorporate new capabilities — like the Joint Tactical Radio System. Work in this area is concentrating on upgrading power generation and distribution and reducing fuel consumption.

To extend its options for energy supply on the battlefield, the Army, through the Tri-Service Petroleum, Oil and Lubricant Users Group, continues to work closely with the other services to coordinate testing and qualification of new renewable fuels. In September 2013, the Army qualified renewable fuels from two processes for use in 50/50 blends with JP-8 in all ground equipment.

Aerial Maneuver

The Army Blackhawk and Apache helicopter engine (a T700) was developed

“Army operational energy is a critical enabler for the range of military operational capabilities from the individual Soldier to strategic levels.” As such, “The Army will manage energy to provide the greatest operational benefit and assure access to sufficient energy supplies.”

**Secretary of the Army,
the Hon. John McHugh⁸⁰**

with 1960s technology and fielded in the 1970s. Although periodically upgraded, by 2003 the potential improvements to the T700 had been maximized and a new design was necessary to further improve the engine’s effectiveness and efficiency. Such a solution was found in the Improved Turbine Engine (ITE). The ITE will replace the current Blackhawk and Apache helicopter engines at the same or less weight with minimal integration modifications. More importantly, it will provide expanded operational range and increased payload and altitude to accomplish Army missions, along with significant operational energy savings. The Army’s current acquisition funding continues to provide support for the ITE.

Contingency Basing

Contingency bases sustain and protect the Army’s forces in the field. Soldiers rest and decompress, vehicles get fixed and fueled, and operational command and communications are powered and protected. Contingency bases have issues similar to those of permanent installations, such as security, energy, water, environmental quality, safety,

occupational health, Soldiers’ quality of life, and impact on the local communities. These issues can compromise the performance of Soldiers, pose tactical and operational risks, and burden the supply chain. Unsustainable practices also may compromise relationships with the local populace. The Army’s goal is to sustainably manage its contingency basing functions without compromising expeditionary standards, especially as the Army reduces its footprint and moves to a more expeditionary force.

In FY12-13, the Army continued to field improvements in support of its deployed forces, including insulated rigid wall structures and shower/toilet/washer and dryer combination systems with greywater systems. Advanced Medium Mobile Power Source generators were also fielded to replace old, inefficient generators, reducing our fuel consumption. The Army will continue to leverage opportunities to integrate solar, wind, and waste management technologies to increase energy security and resiliency in its contingency bases.

Conclusion

The Army is a people-centric organization and efficient technology modifications in equipment is not enough. To succeed, the Army’s Soldiers, Civilians, and Family members must understand sustainability and its influence on their success. Sustainability in operations does not simply concern using less. Instead of rationing ammunition, the Army trains Soldiers to use their ammunition more effectively by improving their marksmanship skills. Similarly, the Army will train Soldiers in sustainable practices to help ensure they get the greatest effect from the resources they use and the way they use them.

Commitment to Soldiers, Families, and Communities

America's Army is the best-trained, -equipped, and -led fighting force in the world — supported by its Soldiers, Families, Civilians, and communities.⁸¹ People are the Army's most valuable resource.

Soldiers, Families, and Civilians render extraordinary service across the organization. At the end of FY13, the Army consisted of more than 1.3 million people: an active Army end strength of 532,000, Army National Guard and Reserve members totaling more than 556,000,⁸² and 215,000 Civilians.⁸³ All of the successes, programs, policies, and initiatives described in this report rely on the Army's core strength of people. Army sustainability can only be achieved when the Army Family is ready and resilient.

Launched on March 1, 2013, the Army's Ready and Resilient Campaign communicates the programs that address the health and well-being, prevention; and response measures to promote physical, mental, and spiritual fitness; emotional stability; dignity and respect of Soldiers, Families, and Civilians and personal growth. The objective of the campaign is to improve individual and unit readiness and resilience by building on the physical, emotional, and psychological capability of the Army Family.⁸⁴ (See more at www.army.mil/readyandresilient.)

Soldiers

The Army needs to recruit and retain quality men and women who give its all-volunteer force depth and

versatility, especially as its overall end strength decreases. The Army seeks to maintain pay and benefits worthy of the service of Soldiers.⁸⁵ It also maintains a health and safety program and training approach to support their well-being. These wide-ranging programs support medical readiness, personnel readiness, and Soldier transitions.

Promoting Deployment Health

Army medical readiness involves a Soldier's career-long health, including well-being and psychological health, also called behavioral health. It also includes programs for post-traumatic stress (PTS), a psychiatric condition that can arise after trauma, and Soldier transition after injury. The Army's PTS programs include resilience training and screening active and reserve component Soldiers for PTS before, during, and after deployment.

In FY13, the Army began a program of embedded behavior health (EBH), which improves access to healthcare for active-duty Soldiers before and after deployment. Thirteen-person EBH teams — which include licensed clinical social workers, psychologists, a psychiatrist or psychiatric nurse practitioner, a case manager, a licensed practical nurse, two psychological assistants, and two front desk personnel

Ready

The ability to accomplish assigned tasks or missions through resilience, individual and collective team training, and leadership.

Resilient

The mental, physical, emotional, and behavioral ability to face and cope with adversity, adapt to change, recover, learn, and grow from setbacks.

— are located within walking distance of the area of duty. They offer expedited evaluations and community-level treatment from a single provider and address issues of substance abuse, combat stress, PTS, and suicide prevention.

As of August 2013, the Army had established 45 EBH teams at installations in the United States and Europe. By the end of FY16, the Army intends to have EBH teams with all active-duty deployable units.⁸⁶ When fully implemented, one behavioral health provider team will serve each battalion. (For more information, go to armymedicine.mil/Pages/EBH.aspx.)

Suicide Intervention, Prevention, and Response

Each Army loss is tragic, so the Army takes a comprehensive approach to suicide intervention, prevention, and response. It encourages leadership engagement,

promotes military/community resources to support help-seeking behaviors, and emphasizes the importance of suicide prevention training. The Army's response to suicide and stress on the force includes partnering with the National Institute of Mental Health to study behavioral resilience, increased screening efforts, better access to behavioral healthcare, in-theater traumatic brain injury screening, a stigma reduction campaign plan, attention and programs for reducing risky behavior (including alcohol and substance abuse), and more. The program includes Families as well as Soldiers.⁸⁷ (For more information, see www.army.mil/readyandresilient/personnel.)

Warrior Transition

The Army also has programs for wounded, ill, or injured Soldiers upon their return from service that go beyond helping with their physical well-being. The Warrior Transition Command serves as the lead for the Warrior Care and Transition Program. Warrior

“Caring for the Army means doing our best to prepare Soldiers, Civilians, and Families for the rigors of Army life.”

– 2013 Army Posture Statement

transition units provide quality care for Soldiers and their Families.⁸⁸ Career and education programs help Soldiers with the transition back into military service or into their next career.⁸⁹ In FY12, six new warrior transition units were formed, consisting of barracks, administrative facilities, and a Soldier and Family assistance center. Medical innovation and groundbreaking research in areas such as traumatic brain injury and PTS are helping the Army improve the care given to wounded Soldiers.⁹⁰ (For more information regarding Warrior Care and Transition, go to www.army.mil/info/organization/offices/eoh/wtc/.)

Career Transition

With the Hire a Veteran Campaign, the Warrior Transition Command is educating civilian employers, showing the benefits of hiring wounded, ill, and injured veterans.⁹² The Army has developed the Hero 2 Hired website for businesses that want to connect with Soldiers, as well as Soldiers looking for new opportunities. (To access the Hero 2 Hired website, go to <https://h2h.jobs/>.)

The Army is building tools and resources for Soldiers to translate their skills for the modern economy. The DoD Transition Assistance Program also furnishes job assistance and separation counseling for Soldiers and their Families and is available at military installations.⁹³

The Soldier for Life mindset is a holistic approach to the military life-cycle career of a Soldier. The Army ensures Soldiers start, serve, and reintegrate strong so they remain Army Strong, serving their communities after their departure.⁹⁴ The Army's Soldier for Life program seeks to connect Army, governmental,



The Warrior and Family Support Center, Fort Sam Houston, TX (photo: US Army).

The Warrior and Family Support Center at Fort Sam Houston coordinates more than 100 activities each month for Wounded Warriors and Families. Private, corporate, and nonprofit donations of time and money make these events possible. In 2008, generous donations and the Returning Heroes Home Project allowed the center to move into its current building. This is an example of how the American people support a ready and resilient force.⁹¹

Table 10. FY12–13 SecArmy and CSA Safety Awards

Category	FY12 Recipients	FY13 Recipients
Army Headquarters Safety Award	Third Army/US Army Central	US Army Reserve
Exceptional Organization Safety Award	Division: 1st Infantry Division, Fort Riley, KS	Division: Division West, First Army, Fort Hood, TX
	Brigade: 1st Brigade Combat Team, 82nd Airborne Division, Fort Bragg, NC	Brigade: 11th Armored Cavalry Regiment, Fort Irwin, CA
	Garrison: Red River Army Depot, TX	Garrison: Red River Army Depot, TX
	Battalion: 307th Brigade Support Battalion, 82nd Airborne Division, Fort Bragg, NC	Battalion: Special Troops Battalion, 1st Brigade Combat Team, 82nd Airborne Division, Fort Bragg, NC
Individual Award of Excellence in Safety	Officer: CPT Peter D. Cha, Commander, Headquarters and Headquarters Company, USAG Yongsan, Korea	Officer: CPT Vladislav Silayev, Commander, Headquarters and Headquarters Company, USAG Yongsan, Korea
	Enlisted: SGT 1st Class Jesse J. Krone, NCO in charge, Explosive Ordnance Disposal Training Complex and 59th Ordnance Brigade, TRADOC, Fort Lee, VA	Enlisted: SGT 1st Class Tony W. Scott, Platoon Sergeant and additional Duty Officer, John J. Kreckel, NCO Academy, 101st Airborne Division, Fort Campbell, KY
	Civilian: Richard Swantek, Safety and Occupational Health Manager, Tank-Automotive Command, Life Cycle Management Command, AMC, Detroit Arsenal, MI	Civilian: Mr. William Gibson, Division West, 1st Army Safety Manager, Fort Hood, TX
	Contractor: Takumi Sakihara Japanese National Safety Specialist, USAG Okinawa, Japan	Not applicable
Industrial Operations Safety Award	Watervliet Arsenal, NY	Watervliet Arsenal, NY
Excellence in Explosives Safety Award	Crane Army Ammunition Activity, IN	Special Forces Qualification Course, Engineer Sergeant (18C) Committee, US Army John F. Kennedy Special Warfare Center and School, Fort Bragg, NC

Sources: US Army Combat Readiness/Safety Center, "Fiscal 2012 safety award winners recognized for efforts," April 19, 2013, www.army.mil/article/101486/Fiscal_2012_safety_award_winners_recognized_for_efforts/ and Michael Negard, "Fiscal 2013 SA/CSA safety award winners announced," April 16, 2013, www.army.mil/article/124142/Fiscal_2013_SA_CSA_safety_award_winners_/.

and community initiatives to reintegrate Soldiers. (Its website includes links and resources for multiple organizations: www.soldierforlife.army.mil/.)

Sexual Harassment/Assault Response and Prevention

An effective and sustainable organization cannot function efficiently when it's not united. The Sexual Harassment/Assault Response and Prevention (SHARP) program is part of supporting a ready and resilient force for all members of the Army. The program's mission is to reduce, with a focus on eliminating, sexual offenses within

the Army through cultural change, prevention, intervention, investigation, accountability, advocacy/response, assessment, and training to sustain the all-volunteer force. (For additional information, see www.army.mil/sharp/.)

To achieve an environment free of harassment and assault, the Army continues to develop the SHARP program and similar initiatives. It has hired sexual assault investigators and positioned them throughout the organization, established a Special Victim Prosecutor program with specially trained lawyers, and established procedures to provide legal counsel for

victims. In November 2013, the Army established a Special Victim Council that works with victim advocates to ensure victims understand their rights.⁹⁵

Beyond response programs, the Army wants to create a climate that respects the dignity of each of its members. The Intervene, Act, and Motivate (I. A. M.) STRONG campaign engages all Soldiers in recognizing that each member of the Army is bound to act to stop sexual harassment and sexual assault by preventing them before they occur. (See www.preventsexualassault.army.mil/Template-IamStrong.cfm?page=what-is.cfm.)

CSF2 Performance Enhancement Training Is on Target for Army's Warrior Games Shooting Team



MAJ John Arbino learned techniques of using deliberate breathing to control his physiology from Lisa Hutchison, a CSF2 master resilience trainer–performance expert. She started working with Team Army's shooting team in October 2012, and with Arbino in particular in December 2012. He is wheelchair-bound, with secondary progressive multiple sclerosis, and 1 of 10 active-duty Soldiers from Warrior Transition Units around the country who joined with two retirees to form Team Army's Warrior Games shooting team.

A CSF2 master resilience trainer–performance expert gives one-on-one performance enhancement training using biofeedback software with a member of Team Army's 2013 Warrior Games shooting team, May 13, 2013 (photo: US Army).

Safety and Occupational Health

The Army safety and occupational health program covers injuries on the job at installations and activities off base. The safety and health of Army Soldiers, Families, and Civilians is addressed through accident prevention and comprehensive health programs.

From FY12 to FY13, accidents, accidental fatalities, and non-fatal injuries decreased. They include privately owned vehicle accidents, training injuries, flight injuries, and injuries from fires, on and off duty. The Army Combat Readiness Center (safety.army.mil/statisticsdata/) tracks the number and rate of injuries, seeking to preserve readiness by preventing the accidental loss of Soldiers, Civilians, and Families.

The Army recognizes exceptional safety performance through SecArmy and CSA Safety Awards. Table 10 lists the FY12–13 recipients recognized for their safety efforts and contributions to the preservation of combat readiness. (For more information on Army Safety awards, go to safety.army.mil/awardsprogram/)

Families

As the Army progresses with workforce reductions, it is making every effort to protect essential Army Family programs.⁹⁶ These programs give Soldiers and Family members a voice to leadership, provide training and advice to Families, support surviving Families, and offer services to wounded Soldiers and Families. The Army Family Covenant, launched in 2007, institutionalizes the Army's commitment to give Soldiers and their Families a quality of life commensurate with their service to the nation. Through the covenant, the Army is committed to improving readiness by continuing to build resiliency through strengthened Soldier and Family programs. (For more information, go to www.goarmy.com/soldier-life/army-family-strong/army-family-covenant.html.)

The Comprehensive Soldier and Family Fitness Program (CSF2), established in March 2013,⁹⁷ is an integral part of the Army's Ready and Resilient Campaign. It is comprised of five functional areas, known as the Dimensions of Strength: Physical, Emotional, Social, Spiritual, and Family.

The program's Army Community Service Centers provide resilience training to Soldiers and Families, with a vision of an Army that is physically healthy and psychologically strong. (See more at csf2.army.mil.) Through the program and previously established initiatives now under this program, such as the Family Resilience Training program, master resiliency trainers offer Family members the thinking skills and coping strategies needed to take care of themselves and their Soldier. Between August 2010 and November 13, 2013, the Army certified 281 trainers, and more than 152,000 Soldiers, Family members, and Civilians have received resiliency training through the Family Resilience Training program.⁹⁸

Communities

The Army continually seeks partnerships and closer relationships with the communities around its installations. Its Community Covenant fosters and sustains state and community partnerships to support Soldiers, Veterans, and their Families in the local civilian community. From program inception in 2008 through 2013, towns in all 50

Volunteer Named Fort Huachuca Military Spouse of Year



Jennifer Rickert (right), an AVC volunteer, discusses the Resilient Spouse Academy with military spouse Missy Thornton at Army Community Service. Rickert was selected by “Military Spouse Magazine” as Fort Huachuca’s Spouse of the Year for 2013. It is the first time a spouse on the installation has been selected to receive this honor.

January 31, 2013 (photo: US Army).⁹⁹

states, and the District of Columbia, have hosted more than 700 Community Covenant signing ceremonies where local leaders pledged their support to military Families.¹⁰⁰ (The covenant’s website, www.army.mil/community, offers resources for Soldiers, their Families, and community organizations.)

The Army Volunteer Corps (AVC) is managed by the Army Community Services. The AVC, established in 2002, connects volunteer Soldiers, Family members, Civilians, retirees, and community members to legitimate service organizations. (For more information regarding AVC and its efforts, go to www.myarmyonesource.com.)

Civil Authorities and Disaster Relief Support

Beyond community engagement, combat, and training, the Army supports civil authorities in disasters as governed

by Title 10 USC Chapter 18, defined in the *National Response Framework* and directed by SecDef. In FY12 and FY13, the Army responded to emergencies in the United States, including Hurricanes Isaac and Sandy, floods in the Midwest, winter storm emergencies, and wildland fires. During Hurricane Sandy, more than 22,000 active and reserve Soldiers, including the National Guard, provided relief.¹⁰¹ The Army also supports civil authorities during chemical, biological, radiological, or nuclear incidents and counterdrug operations. In FY12, approximately 1,200 National Guard Soldiers and Airmen supported the Department of Homeland Security along the southwest US border by providing entry identification and analysis to disrupt criminal networks and activities.

USACE Civil Works Program

The Army Civil Works program, overseen by USACE, serves the Nation by providing quality and responsive development and management of the Nation’s water resources; support to marine transportation systems; protection and management of the natural environment; restoration of aquatic ecosystems; flood risk management and emergency management; and engineering and technical services.¹⁰² In FY13, USACE estimated its flood risk management activities prevented \$13.375 billion in flood damage losses,¹⁰³ hydropower facilities produced 71.6 billion kilowatt-hours of renewable energy, and 370 million visits were hosted at its recreation facilities.¹⁰⁴

GRI Summary

The Army publishes ASR14 in accordance with the GRI RG: Sustainability Reporting Guidelines (third generation, or G3) in conjunction with GRI's Public Agencies Sector Supplement. In 2008, the Army was the first US federal organization to report publicly with the GRI standard, before EO 13514 required agency-level sustainability reporting.

The Army reports data to GRI Application Level B (Figure 10), which means it discloses on all of the general organization and strategy indicators, as well as select indicators on economics, environment, human rights, labor, society, and product responsibility. Not all GRI indicators are material — significant and relevant for disclosure—for the Army. Of 87 indicators, the Army fully reports on 33 and partially reports on 30.

The online GRI Annex to ASR14 includes a series of disclosure tables that describe the recommended content, reference locations in ASR14 where such information is disclosed, and provide links to Army source data. To the extent practical, the tables correlate indicators to other metrics and explain why the Army has not reported on some of them.

The annex to this report, which provides comprehensive reporting of GRI indicators, is now available online at

[www.asaie.army.mil/
Public/ES/sustainability.
html.](http://www.asaie.army.mil/Public/ES/sustainability.html)



Report Application Level		C	C+	B	B+	A	A+
Standard Disclosures	G3 Profile Disclosures OUTPUT	Report on: 1.1 2.1–2.10 3.1–3.8, 3.10–3.12 4.1–4.4, 4.14–4.15	Report Externally Assured	Report on all criteria listed for Level C plus: 1.2 3.9, 3.13 4.5–4.13, 4.16–4.17	Report Externally Assured	Same requirement for Level B	Report Externally Assured
	G3 Disclosures on Management Approach OUTPUT	Not required		Management approach disclosures for each indicator category		Management approach disclosures for each indicator category	
	G3 Performance Indicators and Sector Supplement Performance Indicators OUTPUT	Report on a minimum of 10 performance indicators, including at least one from each of: economic, social, and environmental		Report on a minimum of 20 performance indicators, including at least one from each of: economic, environmental, human rights, labor, society, and product responsibility		Report on each core G3 and sector supplement* indicator with due regard to the Materiality Principle by either: a) reporting on the indicator or b) explaining the reason for its omission	

*Sector supplement in final version.

Figure 10. Army Report Standard Disclosure Summary for GRI Application Level

Abbreviations

ACOM	Army command	DoD	Department of Defense
ACP	<i>Army Campaign Plan</i>	DOE	Department of Energy
ACSIM	Assistant Chief of Staff for Installation Management	DRU	direct reporting unit
ACUB	Army Compatible Use Buffer	EBH	embedded behavior health
AEC	US Army Environmental Command	ECIP	Energy Conservation Investment Program Solar EIS environmental impact statement
AMC	US Army Materiel Command	ED ANMC	Executive Director Army National Military Cemeteries
ANC	Arlington National Cemetery	EISA 2007	Energy Independence and Security Act of 2007
ARNG	Army National Guard	EITF	Energy Initiatives Task Force
ASA(ALT)	“Assistant Secretary of the Army for Acquisition, Logistics, and Technology”	EMS	environmental management system
ASA(IE&E)	Assistant Secretary of the Army for Installations, Energy and Environment	ENF	enforcement action
ASA(M&RA)	Assistant Secretary of the Army for Manpower & Reserve Affairs	EO	executive order
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers	EPA	Environmental Protection Agency
ASPG	<i>Army Strategic Planning Guidance</i>	EPAct05	Energy Policy Act of 2005
ASR12	Army Sustainability Report 2012	ESA	Endangered Species Act
ASR14	Army Sustainability Report 2014	ESCO	Energy Service Company
ATEC	US Army Test & Evaluation Command	ESPC	Energy Savings Performance Contract
AVC	Army Volunteer Corps	FEMP	Federal Energy Management Program
Btu	British thermal unit	FORSCOM	US Army Forces Command
C&D	construction and demolition	FY	fiscal year
CAA	Clean Air Act	G3	third generation
CIO	Army Chief Information Officer	Gal/GSF	gallons per gross square foot
COE	Army Chief of Engineers	GGE	gasoline gallon equivalent
CSA	Chief of Staff, Army	GHG	greenhouse gas
CSF2	Comprehensive Soldier and Family Fitness Program	GRI	Global Reporting Initiative
CWA	Clean Water Act	GSA	General Services Administration
CY	calendar year	GW	gigawatt
DCS	Army Deputy Chief of Staff	HQDA	Headquarters, Department of the Army
		ICRMP	Integrated Cultural Resource Management Plan
		IMCOM	US Army Installation Management Command
		INRMP	Integrated Natural Resources Management Plan
		INSCOM	US Army Intelligence & Security Command

IPM	Integrated Pest management	SDWA	Safe Drinking Water Act
IPMP	Integrated Pest Management Plan	SecArmy	Secretary of the Army
ITAM	Integrated Training Area Management	SecDef	Secretary of Defense
ITE	Improved Turbine Engine	SHARP	Sexual Harassment/Assault Response and Prevention
kBtu/SF	kilo British thermal units per square foot		
lbs	pounds	SMDC/ ARSTRAT	US Army & Space Missile Defence Command/ Army Strategic Command
LEED	Leadership in Energy and Environmental Design	SRP	Sustainable Range Program
LRAM	Land Rehabilitation and Maintenance	SSO	Senior Sustainability Official
MATOC	multiple award task order contract	SSPP	<i>Strategic Sustainability Performance Plan</i>
MDW	US Military District of Washington	TCE	trichloroethylene
MeCL	methylene chloride	TES	Threatened and Endangered Species
MEDCOM	US Army Medical Command	TRADOC	US Army Training and Doctrine Command
MTCO ₂ e	Metric Ton Carbon Dioxide Equivalent	TRI	toxic release inventory
MW	megawatt	TSG	The Surgeon General
NA	not applicable	UESC	Utility Energy Service Contracts
NDAA	National Defense Authorization Act	USAASB	US Army Accession Support Brigade
NTV	non-tactical vehicle	USAASC	US Army Acquisition Support Center
NYA	not yet available	USACE	US Army Corps of Engineers
OACSIM	Office of the Assistant Chief of Staff for Installation Management	USACIDC	US Army Criminal Investigation Command
PPCC	President's Performance Contracting Challenge	USAG	US Army Garrison
OASA(IE&E)	Office of the Assistant Secretary of the Army for Installation, Energy and Environment	USAR	US Army Reserve
PMG	Provost Marshal General	USARAF/ SETAF	US Army Africa/ Southern European Task Force
PTS	post-traumatic stress	USARCENT	US Army Central
QDR	<i>Quadrennial Defense Review</i>	USAREUR	US Army Europe
RCRA	Resource Conservation and Recovery Act	USARNORTH	US Army North
REPI	DoD Readiness and Environmental Protection Initiative	USARPAC	US Army Pacific
RG	Reporting Guidelines	USARSO	US Army South
RPMP	real property master plan	USASOC	US Army Special Ops Command
SDD	sustainable design and development	USAWC	US Army War College
SDDC	Military Surface Deployment & District Command	USC	United States Code
		USMA	US Military Academy

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