



**Assistant Secretary  
of the Army for  
Civil Works**



**US Army Corps  
of Engineers®**

**Strategic Sustainability Performance Plan  
FY 2010 – FY 2020**

2 June 2010



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# Section One: Agency Policy and Strategy

## I. Agency Policy Statement

As a prominent Federal entity, a key participant in the use and management of many of the Nation's water resources, a critical team member in the design, construction, and management of military and civil infrastructure, and as responsible members of the Nation's citizenry, the U.S. Army Corps of Engineers (USACE) strives to protect, sustain, and improve the natural and man-made environment of our Nation, and is committed to compliance with applicable environmental and energy statutes, regulations, and Executive Orders. Executive Order (EO) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, states that sustainability "means to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations." The EO emphasizes that sustainability should not only be a natural part of all USACE decision processes, but should also be part of our organizational culture. The USACE is a steward for some of the Nation's most valuable natural resources, and we must ensure our customers receive products and services that provide for sustainable solutions that address short and long-term environmental, social, and economic considerations.

USACE sustainability performance will be evaluated against EO 13514, EO 13423 (*Strengthening Federal Environmental, Energy, and Transportation Management*), the Energy Independence and Security Act (EISA) of 2007, the Energy Policy Act (EPAAct) of 2005, the 10 USACE Strategic Sustainability Performance Plan (SSPP) goals, and other relevant executive and congressional directives. These goals are to be integrated into our organizational strategic guidance, which includes the USACE Civil Works (CW) Strategic Plan, the Military Programs (MP) Strategic Plan, and the USACE Campaign Plan. To achieve sustainability, I ask that a systems approach be employed and programmatic solutions sought for each area of concern and within each level of command. While systems analysis and programmatic solutions are important, our key to success will be the assignment and acceptance of personal responsibility for achieving a sustainable future by leaders throughout USACE. This SSPP applies to all aspects of USACE activities to include contracted work; however, the sustainability outcomes supported by USACE on behalf of Federal customers will be accounted for in the customers' SSPPs.

The priority areas for sustainability in Fiscal Years 2011 and 2012 (FY11 and FY12) include:

- Establish or validate facility, vehicle, and vessel baselines for consumption of energy, water and petroleum, and for the production of solid waste, while developing effective data collection systems for each.
- Establish or update USACE and subordinate organization policies, standards, and procedures to address sustainability.
- Define USACE covered facilities, and initiate energy and water audits at a minimum of 25% of covered facilities.

- Identify and implement energy, fuel, and water efficiency programs and technologies that will place the USACE on target to meet its statutory requirements.
- Identify, develop, and submit proposals to achieve hydropower modernization and other renewable energy generation and consumption.
- Identify, plan for and begin programming non-tactical vehicle (NTV) right-sizing and right-positioning actions at all organizational levels to meet long-term NTV goals for reducing petroleum use and increasing consumption of alternative fuels.
- Identify, plan for and begin programming vessel fleet fuel efficiency initiatives, and evaluate technologies and options for accelerating and expanding USACE fleet enhancements.
- Identify USACE renovation projects for compliance with the Five Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (the Guiding Principles)
- Conduct climate change adaptation pilots and transfer "lessons learned" to the USACE and Major Subordinate Command (MSC) Headquarters for policy development and Districts for implementation.

Compliance with sustainability requirements will be a challenge, especially in the initial stages. However, it is just one of the challenges that the USACE faces regularly and is one where I am confident that we can not only meet the goals, but set standards for others to emulate. I believe that excelling in sustainability is not only good for the Nation and our posterity, but a sound business practice that will ease some of our future operations and maintenance expenses. I have every confidence that we will be successful.

Essayons!

  
Jo-ellen Darcy  
Assistant Secretary of the Army (Civil Works)  
Senior Sustainability Officer for USACE

June 2, 2010  
Date

## II. Sustainability and the Agency Mission

The mission of USACE is to provide vital public engineering services in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters. In achieving this mission, the USACE must contribute to the national welfare and serve the public by providing quality and responsive services to the Nation, the Army, and other customers in a manner that is environmentally, economically, and socially sustainable, and that focuses on public safety and collaborative partnerships.

Key mission activities include:

- Development and management of the Nation's water resources
- Protection and management of the natural environment
- Restoration of aquatic ecosystems
- Flood risk and emergency management
- Military and civil engineering and technical services.

To be successful, the USACE must serve not only as a competent public engineering organization, but also as a steward of the Nation's natural resources. This is especially true concerning water resources. EO 13514 makes it clear that USACE, as a Federal agency, should strive to be an example of sustainable behavior in the conduct of its daily operations and execution of projects and programs. USACE is not only committed to complying with environmental and energy statutes, regulations, and Executive Orders, but for over 230 years, the USACE has been an innovative leader in science, engineering, and construction. USACE must continue this leadership through sustainable activities that conserve natural resources, reduce greenhouse gas (GHG) emissions, and preserve the natural environment, while continuing to provide for the health, safety, welfare, and economic development of the Nation. To become a GREAT organization, it is essential that the USACE include "sustainability" throughout the "lifecycle" of all its activities. This will require not only adherence to minimum requirements, but also a change in policies and organizational culture. To be GREAT means the members of USACE accept their personal responsibility to help create a more efficient, more effective, and more sustainable future.

### IIa. Environmental Operating Principles

In 2002, the USACE promulgated a set of Environmental Operating Principles that includes "Environmental Sustainability" (Figure 1-1). The USACE Environmental Operating Principles have established a strategic vision for environmental direction that is incorporated throughout USACE. The direction provided by these principles has served as an indispensable guide as the USACE continually evaluates the short and long-term environmental, social, and economic impacts of its projects and operations.

### USACE Environmental Operating Principles, 2002

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

Figure 1-1. USACE Environmental Operating Principles, 2002.

#### I**ib.** Campaign Plan

In 2007, the USACE introduced its Campaign Plan to provide strategic direction, transform USACE business approaches, and assess progress. The Campaign Plan consists of the following goals.

Goal 1: Deliver USACE support to combat, stability, and disaster operations through forward deployed and reach back capabilities.

Goal 2: Deliver *enduring* and essential water resource solutions through collaboration with partners and stakeholders.

Goal 3: Deliver innovative, resilient, *sustainable* solutions to the Armed Forces and the Nation.

Goal 4: Build and cultivate a competent, disciplined, and resilient team equipped to deliver high quality solutions.

The USACE believes that sustainable solutions can simultaneously protect the environment and natural resources while effectively achieving project and program outcomes. Sustainability is an important component in each of the USACE Campaign Goals.

The USACE is both an owner/operator of facilities and a provider of services to a wide-range of customers. While the majority of facilities owned and operated by the USACE are funded through energy and water appropriations; engineering, real estate, and scientific services are funded through an array of sources, with a large proportion from defense appropriations. As a

result, a majority of the Strategic Sustainability Performance Plan (SSPP) involving facilities, non-tactical vehicles, and operations is focused on activities associated with the Civil Works Program. However, portions of the SSPP, primarily Goal 10 (Agency Innovation) also describe the sustainability services that USACE provides to customers. Examples of such innovation include reductions in energy and water consumption associated with Leadership in Energy and Environmental Design (LEED) construction and similar sustainability practices and innovations.

Global changes such as demographic shifts, changing land use and cover, and climate change increasingly challenge public health, the health of the natural environment, and the performance of the existing water resources infrastructure. As a result, new strategies are needed to provide for continued public health, safety, welfare, and economic development. As part of the solution, the USACE must operate and sustain existing water infrastructure to meet current and evolving water resources needs. The extent of these challenges is well expressed by the report on events associated with Hurricane Katrina prepared by the Interagency Performance Evaluation Task Force (IPET) in 2009:

*Man-made structures alone cannot sufficiently reduce risk for vulnerable areas. Non-structural solutions such as zoning restrictions, floodproofing, and limited development; and natural processes such as marshes, mangroves, and barrier islands need to be integrated into a systems strategy for risk reduction. In combination with aggressive emergency management planning and execution, an enhanced natural environment would be a major component of a sustainable and effective long-term strategy to deal with the dynamics of climate, demographics, and social and economic well-being.*

Specific to the subject of sustainability, the future challenges in water resources include applications of new methods in social and physical science analyses (e.g., climate change and demographic variations), a better appreciation of the interrelationships between natural and man-made systems, adoption of approaches that require fewer short and long term resources to create and sustain water resources, and better collaboration among the various stakeholders involved with water resources issues. In recognition of these needs, a key initiative undertaken by USACE is the adoption of Integrated Water Resources Management (IWRM) as an overarching strategy to facilitate collaboration between stakeholders and coordinate efforts associated with the natural and built environments. When combined with the six cross-cutting strategies that include applying a systems approach, collaboration, and partnering, use of risk informed decision making, applying innovative financing, use of adaptive management, and application of state-of-the art technology, the Civil Works program is engaging in approaches that facilitate the adoption of sustainable concepts, designs, and operations.

The USACE water resources management mission requires a continuing operation of more than 2500 projects throughout the Nation, many of which have profound life-safety consequences. In addition, USACE must continually plan for the maintenance and rehabilitation of existing projects and construction of new projects to support environmental and economic development needs. Planning, design, and construction of facilities and projects that incorporate best sustainability technology and practice must consider the full life-cycle of the project. This is a fundamental shift in civil and mechanical engineering design and construction that has traditionally

focused on function, safety, and cost. Identifying best practices and new innovations for large and unique projects such as locks, dams, levees, and aquatic ecosystem restoration will require innovation and study. Similarly, practices concerning operations and maintenance of Civil Works facilities will require review and evaluation to determine the best practices to optimize sustainability principles and outcomes.

Each phase of a project's life-cycle will require examination to improve conservation and reduce GHG emissions. This planning should consider alternative GHG reduction strategies, such as construction activities that include incentives for contractor reduction of GHG emissions and development of operational procedures that include GHG emission analyses. Not only will reductions in GHG emissions reduce carbon loading in the atmosphere, but reduce the energy costs that produce them.

## **Iic. Civil Works**

The goals of the Civil Works program are to provide quality, responsive service to the Nation through the following:

- Enable and Assist in the Development of Safe and Resilient Communities and Infrastructure.
- Promote Sustainable Water Resources, Marine Transportation Systems, and Healthy Aquatic Ecosystems.
- Implement Effective, Reliable, and Adaptive Life-Cycle Project Performance.
- Build and Sustain a Competent Team.

Actions to achieve these goals are implemented through eight business areas representing the diversity of the Nation's water resources requirements: (1) Navigation, (2) Flood and Coastal Storm Damage Reduction, (3) Environment, (4) Hydropower, (5) Regulatory, (6) Recreation, (7) Emergency Management, and (8) Storage for Water Supply. While these business areas provide a framework for conducting the Civil Works program, the activities transcend individual programs and often interact to produce multiple water resources benefits. Consequently, close coordination between business programs is required to deliver quality, timely, and sustainable products and services.

Over the past several years, a number of external factors have emerged as significant impacts to Civil Works activities. Of particular importance are climate change and demographic shifts, which affect water availability and water demand. While water demand is primarily a local issue, the USACE is a key participant in meeting that demand with water supply storage that provides for general consumption needs, irrigation, hydropower, and cooling water for fossil fuel and nuclear electrical energy production. Similarly, maintaining inland and coastal navigation remains critical to National and regional economic vitality. In both water supply and navigation, the USACE is a key partner at the macro scale of water and energy sustainability. As emphasized by EO 13514, the leadership set by Federal agencies such as the USACE in reducing their own energy and water consumption, serves as both an example for others to emulate and a catalyst

for innovations that others might adopt. At the macro scale, the reduction in GHG emissions by USACE activities will not only create potential reductions in energy consumption, but will also produce significant reductions in carbon emissions and the future climate change impacts that might be associated with those emissions.

## **IId. Military Programs**

The USACE Military Programs provides premier engineering, construction, real estate, stability operations, and environmental management products and services for the Army, Air Force, other U.S. Government agencies and foreign governments. To accomplish this mission, the Military Programs Directorate has established four core mission areas:

- Strategic Integration (Base Realignment and Closure, BRAC)
- Gulf Region Integration & Security Assistance
- Military Construction
- Stability and Reconstruction Operations.

Major mission activities include construction supporting Army, Air Force and other DoD Agencies; Environment (Formerly Used Defense Sites Program, munitions response, cleanup, and environmental quality support); Real Estate (Army staff mission, Department of Defense Executive Agent, and provision of world-wide real estate services); International and Interagency Services (supporting the Environmental Protection Agency, Department of Homeland Security, Department of State, active in more than 90 Countries); Contingency Support (active in the Global War on Terrorism and reconstruction infrastructure work ); and Installation Support (181 Army installations and 71 Air Force installations).

To maintain its leadership and technical relevance in the provision of the above services, USACE must embrace sustainability principles and concepts and proactively integrate them into the organization's value proposition. USACE is committed to assisting customers to meet their sustainability targets, which may be different from USACE's internal sustainability targets described within this SSPP.

## **III. Greenhouse Gas Reductions**

In FY10, as required by EO 13514 Section 2(a), the Strategic Sustainability Officer (SSO) for USACE established an agency-wide greenhouse gas (GHG) Scopes 1 and 2 reduction target of 23% by FY20 against the FY08 USACE baseline. This target was developed using the Development of Agency Reduction Target (DART) tool for GHG Scopes 1 and 2 emissions provided by the White House Council on Environmental Quality (CEQ) to maintain consistency with other reporting agencies. However, the DART target calculation only included GHG emissions from facility energy consumption and non-tactical vehicle fleet petroleum consumption. As a land and water management agency, USACE also owns and operates a vessel fleet ("floating plant"). Therefore, the standard DART calculation was amended to include GHG emissions associated with floating plant petroleum consumption and establish a floating plant petroleum use reduction target of 7.7% by FY20 from a FY08 baseline. Additionally, USACE extended the Federal energy intensity

reduction target of 30% by FY15 to 30.5% by FY20 as a component of the strategic strategy to meet the 23% GHG reduction target. The Federal GHG Scopes 1 and 2 reduction target of 28% is an aggregate target based on individual Federal Agency targets (including USACE's) ranging from 12.3% to 47.4%.

In FY10, as required by EO 13514 Section 2(b), the USACE SSO established an agency-wide GHG Scope 3 reduction target of 5% by FY20 against a FY08 baseline using the Scope 3 Target Tool provided by CEQ. The Scope 3 Target Tool calculation accounted for the GHG emissions associated with the transmission and distribution (T&D) losses from purchased electricity, contracted solid waste disposal, contracted wastewater treatment, business air travel, business ground travel, and employee commuting. Because USACE has not yet established baselines for these Scope 3 categories, rough estimates of relative magnitude were developed. This analysis indicated that employee commuting and business travel represented the largest opportunities for GHG reductions, while contracted wastewater treatment and solid waste disposal provides comparatively small reduction opportunities. The sub-targets in Section 2, Goal 2 reflect this analysis.

Because USACE has limited direct operational control over visitor activities in our campgrounds, day use facilities, and on our lands and waters, USACE has chosen to exclude from each of the GHG targets the GHG emissions resulting from visitors' activities, but USACE will report the associated facility-based GHG emissions as part of its Comprehensive GHG Inventory. As a recreation provider, USACE is committed to providing quality facilities and services to accommodate the needs of our visitors. Accordingly, the SSPP includes initiatives to improve energy, water, and petroleum efficiency at recreation facilities and to positively influence visitors to support sustainable practices.

Our strategy for reducing GHGs is founded on the execution of requirements that are defined through collaborative planning processes employing (along with other tools) GHG wedge analyses, prioritized through budgeting processes based on risk assessment and benefit-cost analyses, and guided continually at a corporate level with a focus on sustainability. We intend to achieve the reduction targets through incremental investments over time. These investments will be aligned and integrated with mission-defined programs, plans, and budgets to provide life-cycle benefit on a local level while supporting corporate USACE goals and objectives under EO 13514.

In keeping with EO 13514 Section 9 guidance, and using the resulting FY10 comprehensive GHG inventory, we anticipate that near-term efforts for Scope 3 reductions will focus largely on employee business travel and employee commuting. We will also focus on reducing contracted solid waste disposal (except for solid waste disposal associated with emergency operations), primarily to support USACE waste diversion and recycling goals, but also to provide slight reductions in Scope 3 GHG emissions.

## IV. Plan Implementation

### IVa. Internal Coordination and Communication

The EO 13514 Project Delivery Team (PDT), led by the USACE Environmental Community of Practice (CoP) developed the first USACE SSPP. The PDT was comprised primarily of headquarters staff with representation from a wide cross-section of USACE organizations including the Directorate of Resource Management, CW Operations Division, Planning and Policy Division, Engineering & Construction CoP, CW and MP Program Integration Divisions, Real Estate CoP, Installation Support CoP, Interagency & International Support CoP, Directorate of Logistics, National Contracting Organization, Corporate Information, Office of Counsel, Public Affairs, Strategy & Integration Office, Institute of Water Resources, and the Engineer Research and Development Center, as well as the office of the Assistant Secretary of the Army for Civil Works. During the development of the SSPP, USACE maintained coordination with DoD and the Army to ensure alignment with its significant Federal customers.

All USACE employees can find current information on USACE's efforts to implement EO 13514 on the Engineering Knowledge Online (EKO) Environmental CoP webpage through URL:

<https://eko.usace.army.mil/usacecop/environmental/>

### IVb. Coordination and Dissemination of the Plan to the Field

The SSPP was coordinated with the Major Subordinate Commands (MSCs) and will be disseminated throughout headquarters and the field via an Operations Order (OPORD) directing sustainability requirements to be integrated into organizational implementation plans supporting the USACE Campaign Plan in accordance with the USACE Strategic Management System (SMS) described in ER 5-1-15.<sup>1</sup> Section 20(a) of the Executive Order provides that, "This order shall be implemented in a manner consistent with applicable law and subject to the availability of appropriations"; the SSPP should be understood in that light.

Accompanying communications and training plans will be developed to promote understanding of the sustainability requirements. Existing awards programs will be updated to include sustainability criteria as appropriate and new awards programs may be developed to recognize special sustainability achievements. A suggestions program will also be developed to capitalize on employee knowledge and innovation.

As its sustainability initiatives mature, USACE will transform the EO 13514 PDT into a Sustainability Sub-CoP and significantly increase MSC participation in sustainability planning, implementation, and communication.

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<sup>1</sup>ER 5-1-15, *Strategy and Integration - U.S. Army Corps of Engineers Strategic Management*, 1 December 2009, <http://140.194.76.129/publications/eng-regs/er5-1-15/toc.html>

**IVc. Leadership and Accountability**

The Assistant Secretary of the Army for Civil Works (ASA(CW)), as the designated USACE Strategic Sustainability Officer (SSO), is responsible for the execution of the USACE Sustainability Program to include compliance with the requirements of EO 13514, EO 13423, EISA, and EPACT. To assist with the execution of the USACE Sustainability Program, a USACE Strategic Sustainability Team (SST) will be instituted. The SST, in coordination with the ASA(CW), will develop strategic guidance and provide oversight of the USACE Sustainability Program. The SST will be Chaired by the Deputy Commanding General, USACE and include a team composed of the Commanders of the Major Supporting Commands and selected Senior Executives. Routine activities will be accomplished through work groups (WG), project delivery teams (PDT), communities of practice (CoP), etc that will be called upon or formed as required by the SST. The SST will oversee development of reports and other information requests for submission through the SSO to OMB and CEQ.

**IVd. Agency Policy and Planning Integration**

Table 1-1 lists the plans and reports in which the sustainability policy and SSPP goals must be integrated. As these documents are updated, the Sustainability Sub-CoP will ensure each appropriately address sustainability requirements to institutionalize sustainability into existing business practices; “Yes” indicates that the sustainability goal has been integrated into the document; “No” indicates that the sustainability goal has not yet been integrated into the document; and “n/a” indicates that the sustainability goal is not applicable to the document.

**Table 1-1. Critical Planning Coordination.**

<b>Originating Report / Plan</b>	<b>Responsible Organization</b>	<b>Scope 1 &amp; 2 GHG Reduction</b>	<b>Scope 3 GHG Reduction</b>	<b>Comprehensive GHG Inventory</b>	<b>Green Buildings</b>	<b>Regional and Local Planning</b>	<b>Water Use Efficiency and Management</b>	<b>Pollution Prevention and Waste Elimination</b>	<b>Sustainable Acquisition</b>	<b>Electronic Stewardship and Data Centers</b>	<b>Agency Specific Innovation</b>
USACE Campaign Plan	CESI-R	No	No	No	Yes	No	No	No	No	No	Yes
CW GPRA Strategic Plan	CECW-IF	No	No	n/a	No	Yes	No	No	No	No	Yes
MP Strategic Plan (Under Development)	CEMP-IS	No	No	n/a	No	No	No	No	No	No	No

<b>Originating Report / Plan</b>	<b>Responsible Organization</b>	<b>Scope 1 &amp; 2 GHG Reduction</b>	<b>Scope 3 GHG Reduction</b>	<b>Comprehensive GHG Inventory</b>	<b>Green Buildings</b>	<b>Regional and Local Planning</b>	<b>Water Use Efficiency and Management</b>	<b>Pollution Prevention and Waste Elimination</b>	<b>Sustainable Acquisition</b>	<b>Electronic Stewardship and Data Centers</b>	<b>Agency Specific Innovation</b>
CW Budget Engineering Circular	CECW-ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Command Management Reviews		No	No	n/a	No	No	No	No	No	No	No
District Management Reviews		No	No	n/a	No	No	No	No	No	N	No
OMB Circular A-11 Section 300: Planning, Budgeting, Acquisition, and Management of Capital Assets	CECW-CO	No	n/a	n/a	No	No	No	No	No	No	No
Federal Real Property Profile (FRPP) Report	CECW-CO	n/a	n/a	n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a
Federal Energy Management Program (FEMP) Report	CECW-CO & LOG	No	No	No	n/a	n/a	No	n/a	n/a	n/a	n/a
Federal Automotive Statistical Tool (FAST) Report (EPA Act compliance)	LOG	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Energy & Water Management Plan (EISA Section 432 and 543 compliance)	CECW-CO & LOG	No	No	n/a	No	No	No	n/a	No	No	No

Originating Report / Plan	Responsible Organization	Scope 1 & 2 GHG Reduction	Scope 3 GHG Reduction	Comprehensive GHG Inventory	Green Buildings	Regional and Local Planning	Water Use Efficiency and Management	Pollution Prevention and Waste Elimination	Sustainable Acquisition	Electronic Stewardship and Data Centers	Agency Specific Innovation
OMB Circular A-11 Section 53: Information Technology and E-Government	CECI-ZC	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Yes	n/a
OMB Sustainability and Energy Scorecard	CEMP-CEC	No	No	n/a	No	n/a	No	n/a	No	n/a	n/a

#### IVe. USACE Budget Integration

USACE integrated sustainability requirements into existing business processes for planning, programming, and budgeting. The primary impact is on the CW budget. Preliminary guidance was disseminated to the field as a change to the FY12 Budget Engineering Circular and will be expanded on in subsequent years in a Sustainability Annex and within individual Business Line Annexes. The change provides guidance to the field on developing and coding their budget items. Additionally, headquarters will prepare budget justifications for USACE-wide initiatives that align with our sustainability priorities.

#### IVf. Methods for Evaluation of Progress

Sustainability performance will be evaluated using Federal and USACE-defined sustainability measures incorporated in existing management review processes (e.g., the Command Management Review and Implementation Plans (IPlans)), at all organizational levels supporting the Campaign Plan. Results of the management reviews will be communicated internally through command channels at times and in formats required to inform and enable timely updates to policies and procedures designed to enhance USACE progress toward EO 13514 goals. Feedback and information will flow both upward and downward and through communication tools such as existing mission/organization-specific knowledge management websites.

## V. Evaluating Return on Investment

### Va. Economic Life-Cycle Cost / Return on Investment

The USACE will prioritize, fund, and execute initiatives to advance EO 13514 goals and objectives that maximize net national economic, environmental, and social benefits. Prioritization of competing actions will be based on return on investment measured as net economic benefits per dollar of investment with the highest return prioritized first. Our strategy will include a mix of investment scales and each investment will be evaluated in terms of both the rate of return and the degree of certainty of achieving the intended return. The emphasis will be on a mix of near term and longer term initiatives aligned with USACE mission-defined programs, plans, and budgets. These initiatives will be chosen acknowledging our cost sharing partners' interests while supporting overall USACE goals and the objectives of EO 13514. Within this strategy, our intent is to use EO 13514 requirements and resulting USACE-implemented actions to enhance O&M investment in facilities, infrastructure, non-tactical vehicles and floating plant, emphasizing in the near-term a simplified cost-benefit analysis for those deferred investments posing the most critical risk to sustainable mission operations. All actions will be evaluated at a level of detail commensurate with the scope and potential impacts of the action in terms of their beneficial and adverse economic, environmental, and social impacts in appropriate monetary and non-monetary terms over the life of the action. Consistent with the USACE planning approach, these will be evaluated and compared with and without the initiative.

Evaluation of the return on investment will include consideration of uncertainty by balancing a portfolio of near-term initiatives that have more certain returns with those that have a higher return, but are more speculative. Our analysis of return on investment (ROI) will emphasize life-cycle economic and environmental benefits and the life-cycle economic and environmental costs of the initiatives. Over-time, the evaluation of social costs and benefits will become more robust as Federally-provided/designated tools and techniques become available.

### Vb. Social Costs and Benefits

The USACE incorporates a full range of economic, environmental, and social factors in evaluating and prioritizing its activities. A wide range of policy and project guidance relates to the procedures used for life cycle analysis across mission areas. There is an enduring historic base and tradition of social benefit in USACE missions. For example, a seminal directive, *The Flood Control Act of 1936* states that "... the Federal Government should improve or participate .... for flood control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are not otherwise adversely affected." This dual emphasis on efficiency (benefits exceeding costs) and other social effects (lives and social security of people are not otherwise adversely affected) still guides project analyses. Specific analysis procedures are detailed in the "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" (P&G), the Planning Guidance Notebook, ER-1105-2-100, the National Economic Development Manuals series, and other engineering regulations and circulars.

A series of publications has been produced by the Institute for Water Resources from 2004-2010: *Review of Guidance and Procedures for Regional Economic Development and Other Social Effects*, *Theoretical Underpinnings of the Other Social Effects Account*, *Handbook on Applying "Other Social Effects" Factors in Corps of Engineers Water Resources Planning*, *Social Vulnerability Index Handbook*, and *Regional Economic Development Handbook*. These documents provide USACE staff with the tools for analysis of other social effects during project planning. Currently a major exploration of public safety as a factor in project analysis is underway.

Social factors are considered throughout the life cycle analysis. They are critical in defining the problem, establishing opportunities, and defining objectives. They are essential elements in engaging and collaborating with key stakeholders—such as local communities, Federal agencies, state and local governments, academia, and nongovernmental organizations—and strengthen regional partnerships to effect systems focused planning. Social factors are included in life cycle analysis both qualitatively and quantitatively depending on mission appropriateness, data availability and relevance to the decision process.

#### **Vc. Environmental Costs and Benefits**

The USACE has a long history of stewardship of the natural environment on the lands associated with projects it operates. With the passage of the National Environmental Policy Act, these skills were used to evaluate the environmental impacts of proposed projects with increasing sophistication. Ecosystem restoration became an USACE mission in 1990 with a goal to restore degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition. USACE reaffirmed its commitment to the environment by formalizing in 2002 the “Environmental Operating Principles.” The EOPs are applicable to all its decision making and programs. These principles foster unity of purpose on environmental issues, reflect a consistent tone and direction for dialogue on environmental matters, and ensure that employees consider conservation, environmental preservation and restoration in all USACE activities.

Whether reviewing the environmental effects of proposed projects or the benefits of ecosystem restoration the USACE identifies and quantifies the effects in measurable units. In most cases, these are non-monetary. Then systematic Cost Effectiveness and Incremental Cost Analyses are used to aid in identifying alternatives with either the least negative impact or greatest benefit relative to cost.

As part of its commitment to Integrated Water Resource Development, USACE will continue its efforts to develop the scientific, economic, and sociological measures to judge the effects of its projects on the environment and to seek better ways to achieve sustainable solutions.

#### **Vd. Mission-Specific Costs and Benefits**

The Civil Works program supports water resources development, management, and restoration through investigations and surveys, engineering, and design, construction, and operations and

maintenance, as authorized and appropriated by Congress. Civil Works Mission-specific costs and benefits are discussed above.

#### **Ve. Operations & Maintenance and Deferred Investments**

USACE operates and maintains projects that provide river and harbor navigation, flood damage reduction, coastal storm damage reduction, water supply, hydroelectric power, recreation, environmental restoration, and wildlife protection. USACE protects the Nation's waterways and wetlands; and undertakes disaster relief and recovery work.

The criteria used to allocate operation and maintenance funding considers both the condition of the projects as well as the potential risks and consequences if the O&M activity is not undertaken. The criteria include, but are not limited to: cost effective measures to increase or maintain asset availability; cost effective measures to maintain or increase asset reliability; high economic return for the nation; acceptable levels of public safety and health; cost effective measures to address a significant environmental concern; and legal requirements.

#### **Vf. Climate Change Risk and Vulnerability**

Climate change has the potential to affect all USACE missions. The operations and water management control activities associated with the existing capital stock of USACE water projects provides the largest challenge given future climate change and variability. To ensure continued effective and efficient water operations in both the short (5-10 years) and longer term (10–50 years), nationally consistent, but regionally tailored, water management adaptation strategies and polices are needed. Such policies must balance project operations and water allocations within authorized project purposes, with changing water needs and climate driven changes to operating parameters, working in close coordination with a wide variety of intergovernmental stakeholders and partners.

There is increasing concern among the public and the scientific community regarding the effects of dynamic processes and global changes on the fundamental USACE missions of flood risk management, coastal storm risk management, navigation, and aquatic ecosystem restoration, not to mention our other missions. Changing climatic conditions may result in earlier snow melts in many watersheds, which may increase fire susceptibility and insect damage to forest in watersheds and result in more variable levels of water height in coastal and inland waterways.

### **VI. Transparency**

#### **VIa. Internal USACE Communication of Progress on EO 13514**

The USACE will measure and evaluate its progress at least annually by developing and integrating sustainability measures in existing management review processes at all levels of command. Results of the management review will be communicated internally through command channels (upward and downward flow of information and feedback) and through communication tools such as existing mission/organization-specific knowledge management Web sites.

USACE maintains a corporate Web site addressing business and mission for all activities, civil works and military. USACE also maintains Engineering Knowledge Online (EKO) for USACE employees. Federal and USACE sustainability information is posted on the Environmental CoPs EKO page<sup>i</sup> for all USACE employees and a collaborative team page is used by members of the EO 13514 PDT. Forums for discussion and information dissemination also regularly occur at the District level. Environmental staff and staff who support sustainability processes can set up brown bag lunches, workshops, and other discussions to explain what they are doing to meet requirements of EO 13514. Senior leaders and USACE staff will participate in the annual Environmental Conference, which provides a wide forum to discuss goals and performance of USACE programs and initiatives.

#### **VIb. External Communication of Progress on EO 13514**

The USACE will communicate its performance under EO 13514 to external stakeholders using Federally-developed formats, communication tools, and Web sites. We will set up a Web site on the USACE homepage ([www.usace.army.mil](http://www.usace.army.mil)) similar to the Web site the USACE set up for the American Recovery and Reinvestment Act of 2009. On the Web site, we will post press releases, periodic updates, and information about projects and initiatives that USACE districts have undertaken to meet requirements of EO 13514. The Chief of Engineers may add sustainability topics to his blog and the blog can be linked to the USACE Web site. Articles written by staff for both *The Engineer Update* and *The USACE Environment* can be posted to the external USACE Web site and sent to customers as well as members of Congress. Speaking engagements with professional societies will provide opportunities for the USACE to explain the goals that we have laid in the Plan and detail the performance of initiatives developed to achieve these goals. These include the American Planning Association, American Society of Civil Engineers, the Society of American Military Engineers, and others.

Forums that Districts use to communicate to the public such as public meetings, PAO newsletters, monthly news publications, and other public outreach efforts often are used to present information to the public on various project plans. These forums allow USACE to highlight actions that benefit local and regional citizens and the country as a whole. These information forums will be used to make public the initiatives the USACE is undertaking to meet SSPP goals.

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<sup>i</sup> <https://eko.usace.army.mil/usacecop/environmental/>

## Section Two: Performance Review and Annual Update

### I. Summary of Accomplishments

USACE has been active over the past year on many actions, programs, and initiatives that advance sustainability throughout its business areas. The following paragraphs highlight this past year's achievements with respect to goals and targets directed by law, executive orders, and agency policies. These accomplishments specifically encompass civil works since our sustainability support to Federal customers is more appropriately captured in their SSPP accomplishments.

Under USACE climate change adaptation initiatives, IPET/ Hurricane Protection Decision Chronology (HPDC) Lessons Learned Implementation Team, the following has been accomplished (see Goal 10 for more information):

- A Consistent National Datum to Address Sea Level Changes. We developed new guidance in collaboration with the National Oceanic and Atmospheric Administration (NOAA) and conducted a comprehensive evaluation of project datums. See EC 1110-2-6065/6070, Comprehensive Evaluation of Project Datums and Engineer Regulation 1110-2-8160, Policies for Referencing Project Elevation Grades to Nationwide Vertical Datums. A draft EM is in progress.
- Sea-Level Change. We updated guidance on sea-level change to reflect best available science in collaboration with NOAA National Ocean Service and USGS, plus numerous external reviewers (EC 1165-2-211, "Incorporation of Sea-Level Change Considerations in Civil Works Programs").
- Water Resources Management. With the Bureau of Reclamation, NOAA, and USGS, we developed and published in 2009 USGS Circular 1331 – "Climate Change and Water Resources Management: A Federal Perspective." This report showed that climate change could affect all sectors of water resources management.
- Formation of the Climate Change and Water Working Group (CCAWWG) with the Bureau of Reclamation, USGS, NOAA, EPA, and FEMA. In January of 2010, USACE led the first of a series of CCAWWG workshops on climate change and water management.

At the District level, Civil Works initiatives include, but are not limited to:

- Reducing Louisville District's carbon footprint by replacing up to 21 non-hybrid government vehicles currently in its inventory with energy-efficient vehicles.
- Incorporating numerous sustainable features into a major renovation of an Alaska District field office at the Chena Flood Control Project. The renovation includes radiant floor heat, adding more wall and ceiling insulation, upgrading windows, doors, and garage doors, using a masonry heater to heat the administrative/visitor area, installing motion-activated Light-emitting Diodes (LEDs), using photoelectric arrays, using green materials such as stone floors, recycled barn siding, and concrete countertops.

- Renovation of two office areas by Seattle District to make them more sustainable by using products certified by Greenguard Environmental Institute, including carpeting, office furniture and a reception area countertop made of recycled aluminum in an eco-friendly resin.
- Solar electricity systems are being installed at nine Sacramento District park and dam operations in California to improve the sustainability of the district's projects. The systems are expected to provide 41 percent of each office's electricity needs on average, and will curb carbon emissions by 156,000 lb annually.
- The Solar Tracker Green Energy Project at Shenango Lake, a USACE recreation area outside Pittsburgh, Pa., has been completed. A solar tracker, with nine solar panels, was installed near the lake's ranger station to maximize power generation and reduce electricity costs. It is being used as an educational tool for visitors to the lake and recreation about the benefits of solar energy.
- Since 2001, Bonneville Power Administration (BPA) has conducted energy audits at numerous Northwest Division BPA funded projects and awarded monetary incentives. This is an excellent example of how agencies can work together to achieve energy reduction goals.
- Seattle District used American Recovery and Reinvestment Act funding to repower the Vessel Puget to replace aging, inefficient engines with computer-controlled Tier 2 engines that will markedly reduce diesel exhaust particulates and GHG emissions.

## II. Goal Performance

Because USACE has limited direct operational control over visitor activities in our campgrounds and day use facilities, USACE has chosen to exclude energy and water consumption in recreation facilities from the reduction targets of this SSPP, but we will report the associated facility-based GHG emissions as part of our comprehensive GHG Inventory. As a recreation provider, USACE is committed to providing quality facilities and services to accommodate the needs of our visitors. Accordingly, the SSPP includes initiatives to improve energy, water, and petroleum efficiency at recreation facilities and to positively influence visitors to support sustainable practices.

Consistent with EO 13514 §2(a), GHG emissions from USACE owned or operated vehicles, vessels, aircraft, and non-road equipment for emergency response activities are excluded from the GHG reduction targets, but will be reported as part of the comprehensive GHG inventory.

Consistent with EO 13514 §17, in FY 11-12, this SSPP addresses only USACE activities, personnel, resources, and facilities that are located within the United States. During this time period, we will evaluate the mission implications of the potential expansion of SSPP scope to address certain USACE activities, personnel, resources, and facilities that are located outside the United States (e.g., Europe, Far East, and Japan Districts).

All 10 sustainability goals are structured in the same manner:

**a. Goal Description**

This paragraph lists the Federal requirements that make up the overall goal. Some targets were established by USACE to meet the requirements of EO 13514 or the intent of EO 13514.

**b. USACE Lead Organization(s)**

This paragraph lists the USACE organization(s) that has the overall responsibility for meeting the goal targets. These organizations will ensure appropriate policies are implemented and the desired results are being achieved.

**c. Implementation Methods**

This paragraph describes USACE’s strategic approach to achieving the goal in the near to mid-term (1-5 years).

**d. Positions**

This paragraph discusses the human resources needed (if any) to achieve the goal.

**e. Planning Table**

This table depicts the annual Federal requirements as well as the USACE interim targets. USACE is committed to assisting customers to meet their sustainability targets which may be different from USACE’s internal sustainability targets described within the following planning tables.

**f. Status**

This paragraph describes USACE’s current status in achieving the goal targets. Baselines are included here if they have been established.

**IIb. Goal 1: Scope 1 & 2 Greenhouse Gas Reduction**

**a. Goal Description**

EO 13514 §2(a): USACE established a 23% reduction target for GHG Scopes 1 and 2 emissions by FY20 (baseline FY08). The primary means of achieving this reduction will be through the energy and fuel sub-targets below.

Buildings:

EISA §431: Reduce building energy intensity 3% annually through 2015, or 30% total reduction by 2015 (baseline FY03). USACE extended this target to 30.5% by FY20 to meet its 23% GHG scopes 1 and 2 reduction target by FY20.

EPAAct 2005 §203: Increase renewables to 3% in FY07-09, increasing to 5% in FY10-12, increasing to 7.5% in FY13 and beyond. EO 13423 §2(b) requires that 50% of statutorily required renewables comes from “new” (as of 1999) sources.

Non-Tactical Vehicle (NTV) Fleet:

EO 13514 §2(a)(iii)(C): Reduce fleet total consumption of petroleum products 2% annually through end of FY20 (baseline FY05).

EISA §142: Achieve 10% increase per year in non-petroleum fuel use (compounded annually) by 2015 (baseline FY05).

EO 13514 §2(a)(iii)(B): Optimize number of vehicles in fleet.

EO 13514 §2(a)(iii)(A): Use low-GHG-emitting vehicles.

Floating Plant:

USACE established a 7.7% reduction target for floating plant petroleum consumption by FY20 (baseline FY08) to meet its 23% GHG scope 1 and 2 reduction target by FY20.

**b. USACE Lead Organization(s)**

Civil Works Operations (CECW-CO), Directorate of Research & Development (CERD-ZB), Directorate of Logistics (CELD-ZA).

**c. Implementation Methods**

*Facility Energy Intensity and Renewable Energy*

USACE will employ a multi-faceted approach to achieve the facility energy intensity and renewable energy goals: (1) developing and implementing a standard set of energy efficiency measures at appropriate USACE facilities, (2) identifying and seizing facility-specific opportunities for energy-reducing investments, (3) increasing the generation and use of “new” hydropower at Civil Works projects through both internal USACE hydropower modernization and public-private (FERC) partnerships at USACE dams, and (4) investing in renewable energy generation at USACE facilities and/or in partnerships with other local or regional public and private entities.

The term “facility” is intended to include all USACE infrastructure except that which can be excluded per the Department of Energy Federal Energy Management Program *Guidelines Establishing Criteria for Excluding Buildings from the Energy Performance Requirements of Section 543 of the National Energy Conservation Policy Act as amended by the Energy Policy Act of 2005*, dated 27 January 2006. However, note that the April 2010 draft Federal GHG Accounting and Reporting Guidance indicates that the energy consumed in these “excluded” buildings still contribute towards GHG emissions and cannot be excluded from the GHG reduction targets.

Because USACE has limited direct operational control over visitor activities in our campgrounds and day use facilities, USACE has chosen to exclude energy and water consumption in recreation facilities from the targets associated with this goal. As a recreation provider, USACE is committed to providing quality facilities and services to accommodate visitors’ needs. The SSPP includes initiatives to improve energy and water efficiency at recreation facilities to positively influence visitors and to support sustainable practices.

(1) Developing and implementing a standard set of energy efficiency measures at all USACE facilities: In FY10-11, USACE will work to identify and fund a number of GHG footprinting pilot studies and energy audits designed to characterize in detail our facility energy consumption and GHG emissions characteristics. One outcome of these studies will be the identification of a set of

practices to improve energy efficiency at USACE facilities. We will establish an environmental management program within the USACE environmental management system to track implementation of appropriate subsets of these practices across USACE facilities.

(2) Identifying and seizing facility-specific opportunities for energy-reducing investments: In FY10-11, USACE will work to improve and evaluate energy consumption data from FY03, FY08 and FY09 to identify facilities, such as data centers, laboratories, and large administrative complexes, that may offer energy reduction opportunities that hold promise for energy reductions far exceeding the energy efficiencies targeted by the efforts described in (1), above. Seizing these types of opportunities will require substantial investments in resources, and careful consideration of benefits, costs, and risks – all of which is enabled by USACE budgeting processes, and informed by the broad scope of scientific, technical, and mission-based knowledge of USACE employees.

The energy and water audits and follow-on actions described above will be closely aligned with Goal 4, “High Performance Sustainable Design/Green Buildings” to ensure all energy conservation measures are considered for adoption with their life cycle costs considered.

(3) Increasing the generation and use of “new” hydropower at Civil Works projects through both internal USACE hydropower modernization and public-private (FERC) partnerships at USACE dams . In FY10, the USACE hydropower community will complete a Hydropower Modernization Study, which will identify the best locations among current USACE hydropower dams for future investments to increase hydropower generation capacity. Although the final results of the Hydropower Modernization study are not available as of the date of the FY10 SSPP, preliminary data indicate that there are opportunities to expand hydropower generation at USACE locations. As an example of the magnitude of GHG reduction to be gained from hydropower improvements, one possible scenario involves rehabilitating four hydropower generating units at three USACE hydropower dams. The rehabilitation of these units would have the potential to provide an increase of over 47 gigawatt hours in new hydropower energy. Based on the DART emission factors, generating this amount of hydropower energy would avoid generation of approximately 30,000 MTCO<sub>2</sub>e annually. In addition to potential scenarios for rehabilitating facilities, we will consider opportunities to provide power to USACE facilities that are not currently utilizing station power, thereby increasing our use of renewable energy. Greenhouse gas reduction estimates for the aforementioned activities were not included in the development of the USACE GHG reduction targets, but they will be accounted for in future USACE Comprehensive GHG inventories in accordance with the final version of the Federal GHG Reporting and Accounting Guidance.

Another opportunity to expand hydropower generation at USACE facilities is the FERC program. In excess of 200 FERC license applications are expected in the next 12-24 months, suggesting significant opportunities for new hydropower generation capability on USACE lands and waters. We will also work closely with other Federal agencies and FERC licensees to identify opportunities to power additional USACE facilities from hydropower capabilities developed under FERC.

Hydropower opportunities at USACE projects will be evaluated on a case-by-case basis with consideration of factors such as existing dam safety conditions, and environmental and endangered species restrictions.

(4) Investing in renewable energy generation at USACE facilities and/or in partnerships with other local or regional public and private entities: In FY10-11, USACE has a number of renewable energy initiatives already under construction at USACE facilities, some of which were funded through the American Recovery and Reinvestment Act of 2009 (ARRA). We have excellent examples of renewable energy projects in California, where work is underway to install nine solar photovoltaic (PV) systems at offices in Sacramento District and at the visitor center at the San Francisco Bay Model in Sausalito. The solar PV systems are expected to provide over 40% of each facility's electrical power. Using our experiences and lessons-learned in these and other ongoing renewable energy projects, coupled with strong corporate commitment to increasing the generation and use of renewable energy at USACE facilities, we will begin in FY10-11 to identify the best opportunities for solar, wind, and other renewable energy projects at facilities USACE-wide. We have integrated EO 13514 requirements into our FY12 budget guidance, and we are considering innovative approaches to resource sustainability initiatives, in general, including site-specific renewable energy projects conducted by USACE or in partnership with local and regional entities working to generate and use renewable energy.

Our success in implementing this multi-faceted approach will rely heavily on leadership support from within USACE, Army, DoD, and the Administration, as well as continual improvement in the availability and quality of data to guide, support, and evaluate our progress. Equally critical to our success will be USACE-wide collaboration in a systems-based approach that applies the diverse talents of USACE people and organizations, and uses integrated knowledge of USACE missions, lands, waters, and energy and petroleum consumption characteristics to inform and conduct a GHG wedge analysis in which facility energy consumption will be one of many elements.

#### *NTV Fleet Petroleum Reduction, Alternative Fuels, Right-sizing and Low Emission/High Fuel Economy Vehicles*

USACE is committed to reducing petroleum consumption and achieving all NTV fleet-related goals. An initial priority for USACE in FY10-11 will be to work with DoE to update the USACE FY05 fuel consumption baseline in FAST to correct inaccuracies that are described in the "Status" section below. USACE also plans to complete work on development of complete and accurate data depicting the composition (sedan, pick-up, SUV, flatbed, etc.), capabilities (alternative fuel, flex fuel; hybrid; electric; 2WD, 4WD; V-6, V-8; etc.) and distribution (USACE facility and latitude/longitude) of the roughly 8000 NTVs (as of FY09) currently in the USACE inventory. The intended outcome of this effort is to provide visibility of USACE NTV fleet distribution, to include vehicle capabilities and garaged location, to support decisions that appropriately align specific vehicles with local mission requirements and local market capabilities, such as alternative fuel availability. We will make this information available to USACE fleet managers, commanders, and Civil Works Chiefs of Operations and Operations project managers for use in planning and budgeting to support CW Operations NTV fleet sustainability initiatives — to right-size and right-

position the fleet, while simultaneously increasing the average fuel efficiency of the fleet by requisitioning the most fuel efficient NTV capable of meeting the local mission requirements. For example, in FY10, 25% of USACE new and replacement vehicle acquisitions were for hybrid vehicles. USACE is considering the benefits, costs, and mission impacts of gradually increasing the number of hybrid vehicles in its NTV fleet by routinely requesting hybrids during the annual vehicle acquisition process. One challenge we see with the acquisition of hybrids is the fact that there seems to be little incentive (in terms of reduced operating costs) for organizations to invest the incremental increase in GSA lease cost, which is roughly 25% more than the equivalent gasoline or flex-fuel vehicle.

#### *USACE Floating Plant Petroleum Reduction*

In the near term (FY10-15), the major environmental aspects of the floating plant being addressed by the Marine Design Center (MDC) are air and water emissions, fuel consumption, and overall vessel efficiency (maneuvering, speed, operations, etc.).

Work is already underway to repower a number of USACE hopper dredges with engines designed to meet both Federal and California Tier 2 air emissions requirements, which are the most stringent in the nation. The Tier 2 engines, coupled with changes in hull design and hull coatings, have been shown to reduce vessel fuel consumption by up to 15%. MDC is also evaluating use of bio-based hydraulic fluids and greases, as well as environmentally benign hull coatings, all of which will lead to reductions in chemical leaching and releasing to waterways.

In the period from FY15 through FY20, USACE plans to continue the investigation and application, as appropriate, of various methods of improving the operational efficiency and lessening the negative environmental impacts of its floating plant fleet. These methods include alternative fuel technology, alternative power sources, power management improvements, and vessel design, operation, and maintenance improvements.

#### Positions

We believe two full-time facility energy/water manager positions are required for HQUSACE based on application of criteria (one energy manager per 5 million GSF) cited in the FEMP Facility Energy Management Guidelines and Criteria for Energy and Water Evaluations in Covered Facilities, 25 November 2008.

**d. Planning Table**

**Table 2-1. Goal 1 Planning Table.**

	<b>SCOPE 1&amp;2 GHG TARGET</b>	Unit	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	....	FY 20
Buildings	Energy Intensity Reduction Goals (BTU/SF reduced from FY03 base year)	%	15%	18%	21%	24%	27%	30%	hold	....	hold
	Planned Energy Intensity Reduction (BTU/SF reduced from FY03 base year)	%	3%	6%	12%	18%	24%	30%	30.1%	...	30.5%
	Renewable Electricity Goals (Percent of electricity from renewable sources)	%	5%	5%	5%	7.5%	hold	hold	hold	hold	hold
	Planned Renewable Electricity Use (Percent of electricity from renewable sources)	%	0%	2%	5%	7.5%	hold	hold	hold	hold	hold
Fleet	NTV Petroleum Use Reduction Targets (Percent reduction from FY05 base year)	%	10%	12%	14%	16%	18%	20%	22%	....	30%
	Planned Petroleum Use Reduction (Percent reduction from FY05 base year)	%	0%	2%	6%	10%	15%	20%	22%	....	30%
	Alternative Fuel Use in Fleet AFV Target (Percent increase from FY05 base year)	%	61%	77%	95%	114%	136%	159%	hold	....	hold
	Planned Alternative Fuel Use in Fleet AFV (Percent increase from FY05 base year)	%	1760%	hold	hold	Hold	hold	hold	hold	....	hold
	USACE Floating Plant Petroleum Reduction (% reduction (GGE) from FY08 base year)	%	2%	3.25%	3.75%	4.75%	5.25%	5.3%	5.8%	...	7.7%
	<b>Scope 1 &amp; 2 - Reduction Target (reduced from FY08 base year)</b>	%	<b>2.2%</b>	<b>4.5%</b>	<b>8.6%</b>	<b>12.8%</b>	<b>16.9%</b>	<b>21.1%</b>	<b>21.5%</b>	<b>....</b>	<b>23%</b>

**e. Status**

*Facility Energy Intensity and Renewable Energy*

The FY09 USACE facility energy intensity reduction (estimated to be roughly 3% relative to the FY03 baseline) and renewable electricity data use (0%) indicate that USACE is not currently on-track to achieve the FY10 intermediate Federal targets of 15% and 5%, respectively, for reducing energy intensity and increasing renewable energy. Accordingly, the planning table for Goal 1 reflects a slow start, and then an aggressive ramp-up to meet the final Federal goals of a 30% reduction in facility energy intensity by FY15, and 7.5% renewable electricity use by FY13. Relative to our FY08 GHG baseline of 276,754 MT CO<sub>2</sub>, and as of the end of FY09, our DART-estimated Scope 1 & 2 CO<sub>2</sub> emissions are slightly higher, at 283,638 MT CO<sub>2</sub>.

*NTV Fleet Petroleum Reduction, Alternative Fuels, Right-sizing and Low Emission/High Fuel Economy Vehicles*

The FY09 USACE NTV fleet petroleum consumption as reported in FAST was 4,947,565 Gallons of Gasoline Equivalent (GGE), including 101,490 GGE of alternative fuel consumption. Relative to the FY05 baseline (4,936,769 GGE consumption with 5464 GGE of alternative fuel consumption), USACE status has had essentially “no change” (0.2% increase) for petroleum consumption. We have, however, identified an issue with the USACE NTV petroleum consumption baseline. Specifically, USACE records show that the FY05 baseline data in the Federal Automotive Statistical Tool

(FAST) is inaccurate, and, in fact, it differs from records submitted by USACE to GSA by over 20%. The inaccuracies resulted from an incident in FY05 when the GSA inadvertently omitted several USACE Billing Office Address Codes (BOACs) during the annual upload of USACE NTV fleet data to the FAST. USACE engaged with Army and OSD to resolve the inaccuracies in FY07, but USACE FY05 baseline data in FAST was not updated; therefore, USACE will engage with DoE to resolve the situation with the USACE FY05 baseline.

USACE consumption of alternative fuel (virtually all of which is E85) has increased by over 1700% since FY05, but it remains at only about 2% of overall fuel consumption. As of the date of this plan, the planning table for Goal 1 reflects a slow start, and then an aggressive ramp-up to meet the final Federal goals of a 20% reduction in NTV petroleum use by FY15, and 30% by FY10. If USACE is successful in updating the FY05 NTV petroleum consumption baseline, the planning table will be updated accordingly.

USACE took a major step toward the NTV goals with the issuance of the U. S. Army Corps of Engineers Non-Tactical Vehicle Petroleum Reduction Compliance Strategy and Action Plan (the Plan) in March 2009. The Plan incorporates the non-tactical vehicle fleet, petroleum, and alternative fuel-related goals of relevant Federal statutes and executive orders up to and including EO 13423. The Plan articulates, in detail, the USACE commitment to achieving NTV-related goals, as well as the path forward.

USACE is partnering with GSA to evaluate NetworkFleet, a wireless vehicle monitoring system that offers an integrated wireless location and performance monitoring solution supporting fleet management. The system detects and reports vehicle emissions to support early detection and correction of vehicle performance problems that can reduce the fleet's impact on the environment. The system also provides location and routing of vehicles 24/7, while providing accurate utilization data; remote diagnostics to reduce vehicle downtime and improve fuel efficiency; and other reports and alerts that increase driver productivity and optimize vehicle usage.

In FY10, USACE initiated procurement actions for over 300 gas-electric hybrid vehicles, which is roughly 25% of the total number of vehicles acquired (both new acquisitions and replacements). USACE also established in FY10 the USACE Civil Property Authorization Document (CPAD) to improve accountability, visibility, and management control of the size, distribution, and composition of the fleet, USACE-wide. The CPAD is an essential, requirements-based, foundation for USACE efforts to right-size and right-position the NTV fleet.

#### *USACE Floating Plant Petroleum Reduction*

USACE operates a fleet of over 2500 vessels nationwide, ranging from small patrol boats to sea-going hopper dredges. When USACE established its GHG Scope 1&2 reduction target in January 2010, ASA(CW) chose to include USACE floating plant in the USACE GHG baseline and subsequent reduction efforts. The decision by ASA(CW) was based on the magnitude of floating plant FY08 petroleum consumption (approximately 7.9 million gal of diesel fuel), coupled with recognition of the potential for the advancement of substantial, mission-enhancing, GHG reduction

opportunities. Putting this into context relative to Federal NTV fleet petroleum reduction initiatives, the USACE floating plant in FY08 consumed roughly 1.6 times the amount of petroleum as was consumed by the entire USACE FY08 NTV fleet of roughly 7200 vehicles. This translates into almost 25% of the total USACE (DART-based) GHG footprint.

The USACE Navigation community, with the support of the Marine Design Center (MDC), has long been making vessel improvements in response to stringent environmental regulatory requirements, close scrutiny in the maritime sector, the age of the USACE fleet, and the requirement of PL 95-269 that, “Federal fleet shall be maintained to technologically modern and efficient standards.”

Some opportunities for improvement directly reduce environmental impacts, while others, primarily intended to improve efficiency, will also produce benefits in terms of GHG reduction. Some examples include:

1. Equipment Replacement. Do “in-kind replacement” of older, out-dated equipment with more capable, modern equipment leads to energy savings.
2. Hydrodynamic Improvements. Improvements in vessel hull forms, propulsion and steering systems, and other vessel features can enable vessels to move more efficiently through the water, which in turn reduces energy consumption.
3. Power Management. Vessel power management can be designed to maximize the efficiency of the vessel’s available power. Efficient distribution of power among vessel systems such as propulsion, winches, cranes, and other operating gear allows installed total power to be minimized.
4. Supplemental Alternative Power Sources. Non-traditional sources of power may be readily available based on specific vessel type and vessel use. These sources could include solar power and regenerative power, both of which may essentially be “free” power.
5. Operational Improvements. Improve the actual operation of the vessels to accomplish the mission by enabling vessels to accomplish the same amount of work in less time or with less power utilization. Improvements in this area are increasingly practical with modernized monitoring systems, especially for fuel.

## **IIc. Goal 2: Scope 3 Greenhouse Gas Reduction**

### **a. Goal Description**

EO 13514 §2(b): USACE established a 5% reduction target for GHG Scope 3 emissions by FY20 (baseline FY08).

To meet the above GHG Scope 3 target and following CEQ guidance, USACE established the following sub-targets:

5% reduction in GHG Scope 3 emissions associated with Federal employee business travel (ground and air) by FY20 (baseline FY08).

3.2% reduction in GHG Scope 3 emissions associated with Federal employee commuting by FY20 (baseline FY08).

23.8% reduction in GHG Scope 3 emissions associated with the transmission and distribution losses (T&D) losses from purchased electricity by FY20 (baseline FY08).

**b. USACE Lead Organization(s)**

Civil Works Operations Division (CECW-CO), Directorate of Research & Development (CERD-ZB), Directorate of Logistics (CELD-ZA), and Directorate of Human Resources (CEHR).

**c. Implementation Methods**

USACE is focusing on its comprehensive GHG inventory as the primary means to inform its approach to Scope 3 GHG emissions reduction. The comprehensive GHG inventory is discussed in more detail under Goal 3. The following sections of Goal 2, below, address near-term (FY10-11) actions planned to support Scope 3 emissions reductions.

For purposes of the SSPP and managing its Scope 3 GHG reduction initiatives, USACE is tracking business air and ground travel separately from Federal employee commuting. The basis for choosing this approach is the distinctly different control and measurement methods for these two Scope 3 GHG emission sources.

*Federal Employee Travel*

Business air travel and commuter travel present the largest opportunities to reduce Scope 3 GHG emissions. As we begin to address business air travel, we will partner with DoD in a cost-benefit analysis to increase the availability and use of high quality meeting tools and facilities across USACE, such as videoconferencing, teleconferencing, web conferencing, webinars, and internet broadcasting (webcasting). USACE will develop and issue policy on the subject of reducing the emissions associated with travel, meetings and conferences by other means, as well, such as selecting event sites that minimize participant miles travelled and evaluating alternative modes of travel to reduce overall GHG emissions while still meeting mission requirements in a cost effective manner.

*Employee Commuting*

USACE intends to focus on the aspect of employee commuting over which it has the greatest degree of control and ability to measure. Specifically, USACE will focus on reducing the number of days an employee must be in the office, as opposed to those aspects it has little control over, such as employee modes of transportation and distance travelled. USACE will encourage supervisors to allow eligible employees to take full advantage of alternative work schedules, credit hours, and teleworking to reduce the average number of commuter days per pay period across the entire organization. It is recognized that many positions within USACE are not eligible for teleworking due to the types of duties performed.

*Contracted Waste Disposal*

Based on estimates of solid waste disposal generated using USACE employee population and accepted per capita solid waste generation rates, USACE GHG emissions from contracted solid waste disposal are negligible. As a result, USACE will focus its solid waste management efforts on increasing diversion, as opposed to reducing GHG emissions. Emissions associated with contracted solid waste will be reduced through efforts discussed in Goal 7.

*Transmission and Distribution Losses from Purchased Electricity*

Emissions associated with this category will be reduced through efforts discussed in Goal 1.

**d. Positions**

At this time, there is no reliable process to determine how many personnel will be required to meet this specific goal.

**e. Planning Table**

**Table 2-2. Goal 2 Planning Table.**

<b>SCOPE 3 GHG TARGET</b>	Units	FY 10	FY 11	FY 12	FY 13	FY 14	....	FY 20
Overall Agency Scope 3 Reduction Target (reduced from FY08 base year)	%	0	0.5	1.0	1.5	2.0		5.0%*
Sub-Target for Federal Employee Travel	%						....	5%
Sub-Target for Contracted Waste Disposal	%						....	0%
Sub-Target for Transmission and Distribution Losses from Purchased Energy	%						....	23.8%
Federal Employee Commuting	%						....	3.2%
* 5% reduction target reflects a weighted average of the individual sub-targets based on the relative contribution of each to the total estimated USACE Scope 3 GHG emissions.								

**f. Status**

*Federal Employee Travel*

This emissions category is comprised of two sub-categories: business air travel, which accounts for roughly 40% of USACE Scope 3 emissions, and business ground travel, which accounts for roughly 4% of USACE Scope 3 emissions.

### *Employee Commuting*

Emissions from employee commuting travel comprise roughly 50% of USACE Scope 3 emissions. Telework frequencies estimated from the 2010 Army call for Telework Data shows that, of the 35,280 USACE employees, 76 employees usually teleworked 3 or more days per work week on a regular and recurring basis, 402 employees teleworked 1-2 days per work week, and 300 employees teleworked less than once per work week, but at least once a month.

### *Contracted Waste Disposal*

This emissions category is comprised of two sub-categories: contracted wastewater treatment (<1% of USACE Scope 3 emissions) and contracted solid waste disposal (~1% of USACE Scope 3 emissions).

### *Transmission and Distribution Losses from Purchased Electricity*

This emissions category makes up ~5% of USACE's GHG Scope 3 emissions.

## **II.d. Goal 3: Develop and Maintain Agency Comprehensive Greenhouse Gas Inventory**

### **a. Goal Description**

EO 13514 §2(c): Report a comprehensive GHG emission inventory for FY10 by 5 January 2011, and annually thereafter by the end of January.

### **b. USACE Lead Organization(s)**

Environmental CoP (CEMP-CEC), Civil Works Operations Division (CECW-CO), Directorate of Research & Development (CERD-ZB), Directorate of Logistics (CELD-ZA).

### **c. Implementation Methods**

As mentioned in our discussion of Goal 1 implementation, success in achieving the USACE GHG reduction targets relies on continual improvement in the availability and quality of data to guide, support, and evaluate our progress. In FY10-11, USACE will take a number of coordinated actions intended to improve the availability and quality of data needed to develop and maintain the USACE comprehensive greenhouse gas inventory:

- Evaluate the baseline data used in establishing the USACE GHG reduction targets, the associated data gathering processes, and Federal data requirements (such as the EO 13514 Section 9 guidance) to identify data issues, corrective actions, and opportunities for improvement.
- Conduct GHG footprinting pilot studies at selected USACE Civil Works Operations projects to characterize the sources, chemical forms, and magnitudes of GHG emissions, including those under Scopes 1, 2, and 3.
- Evaluate existing IT systems and USACE databases for "data mining" opportunities to support the development and annual update of a comprehensive USACE GHG inventory.
- Identify and request IT system and database modifications as necessary to enable, streamline, and standardize data gathering for the comprehensive USACE GHG inventory.

**d. Positions**

At this time, there is no reliable process to determine how many personnel will be required to meet this specific goal.

**e. Planning Table**

**Table 2-3. Goal 3 Planning Table.**

<b>Develop and Maintain Agency Comprehensive Greenhouse Gas Inventory</b>	<b>Units</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>	<b>....</b>	<b>FY 20</b>
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**f. Status**

To support the development of the Scope 1 and 2 reduction target, USACE compiled past-year data from a variety of electronic and hard-copy records during FY09. The data supporting development of the USACE GHG reduction targets was compiled as part of a first-ever “USACE-wide” initiative to quantify USACE energy, water, and petroleum consumption. The data gathering initiative encompassed USACE Civil Works Operations projects, USACE laboratories, other USACE-owned facilities and projects, as well as USACE floating plant, and it included data for all relevant, Federally-established baseline years: FY03 for facility energy, FY05 for non-tactical vehicle (NTV) fleet petroleum consumption, FY07 for water consumption, and FY08 for GHG, as well as the USACE-established FY08 baseline for floating plant petroleum consumption.

USACE estimated its Scope 3 emissions associated with waste water and solid waste generation, business air and ground travel, and Federal employee commuting and set its reduction target using the Scope 3 Target Tool. USACE based the individual estimates within the target tool on a variety of sources at DoD, USACE, USEPA, and other national, and private industry sources to develop the full set of USACE input data for the Federal Scope 3 Target Tool.

We consider these data sufficient for initial baseline estimates and target-setting; however, some questions about the completeness, consistency, and accuracy of the data in this first-ever inventory naturally remain. Furthermore, the data available, and the associated data gathering processes rely on manual and ad hoc data calls that are neither readily repeatable, nor conducive to continual improvement in data quality.

## **Ile. Goal 4: High-Performance Sustainable Design/Green Buildings**

### **a. Goal Description**

EO 13514 §2(g)(i): Beginning in FY20 and thereafter, ensures that all new Federal buildings that enter the planning process are designed to achieve zero-net-energy by FY30.

EO 13514 §2(g)(ii): Ensure all new construction, major renovation, or repair and alteration complies with the *Guiding Principles*.

EO 13514 §2(g)(iii): Ensure 15% of existing facilities and building leases (above 5000 gross sq ft) meet the *Guiding Principles* by FY15 and that the agency makes annual progress towards 100% conformance with the Guiding Principles for its building inventory.

EO 13514 §2(g)(iv): Pursue cost-effective, innovative strategies, such as highly reflective and vegetated roofs, to minimize consumption of energy, water, and materials.

EO 13514 §2(g)(v): Manage existing building systems to reduce the consumption of energy, water, and materials, and identify alternatives to renovation that reduce existing assets' deferred maintenance costs.

EO 13514 §2(g)(vi): Optimize the performance of the agency's real property portfolio and reduce associated environmental impacts.

EO 13514 §2(g)(vii): Ensure the rehabilitation of Federally owned historic buildings uses best practices and technologies in retrofitting to promote long-term viability of the buildings.

### **b. USACE Lead Organization(s)**

Civil Works Operations Division (CECW-CO), Directorate of Research & Development (CERD-ZB), Directorate of Logistics (CELD-ZA), Engineering & Construction CoP (CECW-CE), Real Estate CoP (CEMP-CR).

### **c. Implementation Methods**

The USACE implementation of the Five Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles) will focus on three categories: New construction and major renovations of buildings; existing buildings; and new construction of other structures. "Buildings" are given a code of "35" in the Real Property Type data field in the Real Estate Management Information System (REMIS), which is the Corps real property system of record. Implementation strategies to promote and achieve high performance sustainable building design, construction, operation and management, maintenance, and deconstruction are supportive of several other goals in this SSPP, most notably Goals 1 and 6.

#### *New Construction and Major Renovations*

Civil Works will leverage lessons learned from Military Programs guidance and execution to refine Civil Works policy and guidance for new construction and major renovations. Army funding has resourced USACE R&D, policy, and guidance in support of a robust Military Construction

Program. While USACE Civil Works policy, guidance, and programs have not yet advanced to that level, Civil Works will leverage the ongoing Military Programs efforts to optimize existing program transferability. Implementation in the Civil Works Program requires an effort to modify policy and technical guidance under existing funding constraints. Current priorities for updating engineering policy and guidance have been on addressing the backlog of technical guidance focused on life safety issues. Updating policy and technical guidance in response to the EO will require additional resources or a change in priorities.

#### *Existing Buildings*

USACE's inventory of existing buildings in the 2009 Federal Real Property Profile (FRPP) consists of 376 buildings that are  $\geq 5,000$  gross sq ft. USACE will develop a program to evaluate these 376 buildings for compliance with the Guiding Principles and develop plans to ensure that 57 of these buildings comply with the Guiding Principles by FY15. Buildings will be targeted based on their return on investment in terms of cost and contribution to meeting other goals in this SSPP.

The USACE Real Estate office will be fully integrated into the sustainability team to implement the requirements of this goal for in-leased buildings. The need for close coordination is paramount because the Real Property Accountable Officer (RPAO), who resides in USACE's District offices, tracks the asset through its complete life-cycle from acquisition through management to disposal. This goal requires that sustainability be considered through all phases of the asset's life. Acquisition of an asset can either be by construction, purchase, or lease. Construction of a new asset may involve additional land requirements or nonstandard estates to meet engineering sustainability design criteria. The Real Estate professionals will work with the team to determine those requirements, prepare the necessary documents to receive authorization to acquire the necessary interests in land to facilitate construction of the new asset using a sustainable design. For acquisition by purchase, a real estate staff representative will be working with the team to determine if the building complies with the guiding principles, and, if not, whether the deficiencies affect the fair market value to be paid for the facility, which will be part of the acquisition decision to acquire a particular asset.

Acquisition by lease has several aspects. USACE occupies space leased by GSA and space leased by USACE real estate professionals under several statutory authorities. USACE also acquires leased space for the Armed Forces Recruiting Centers. Each lease has several facets that will need to be considered for compliance with the sustainability goals, and the USACE real estate professionals will incorporate the appropriate lease language to ensure that sustainability goals are incorporated. During the management phase of the asset's life-cycle, the RPAO will work with the sustainability team to provide the pertinent information about the asset for additions and betterments, the fair market value, and remaining economic life of the asset, which will be part of the investment decision and maintain the records for financial audit purposes. The USACE real estate professionals also are part of the team that makes the decision to finally dispose of the asset and then prepares the necessary documents to remove the asset from the real property inventory and dispose of it either by bill of sale or by deed if part of a land transaction.

*New Construction of Other Structures*

USACE is collaborating with The American Society of Civil Engineers (ASCE) on an effort to develop a sustainability rating system for structures that fall outside the intent of LEED (i.e., infrastructure that is not conditioned for human comfort such as highways, airports, dams, wastewater treatment plants, etc.). ASCE’s long term objective is to develop a full life-cycle (planning, design, construction, operations, and disposal) rating index. The near term objective is to develop a Version 1.0, focusing on the planning and design phase. ASCE plans to present a working draft of this rating system by October 2010 at its national annual meeting. The expectation is that, once the ASCE sub-committee completes its work on the sustainability rating system, USACE will conduct pilots, and Engineering and Construction will incorporate the rating system into existing policy and guidance documents.

**d. Positions**

Updating policy and technical guidance in response to the EO will require additional resources or a change in priorities.

**e. Planning Table**

**Table 2-4. Goal 4 Planning Table.**

<b>SUSTAINABLE HIGH PERFORMANCE BUILDINGS (Buildings Meeting Guiding Principles)</b>	Units	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15
Total Facility Targets	%	0	2%	4%	8%	12%	15%

**f. Status**

USACE’s inventory of existing buildings in the 2009 Federal Real Property Profile (FRPP) consists of 376 buildings that are ≥5,000 gross sq ft. FY09 was the first year that the Federal Real Property Council guidance made reporting of the “Sustainability” data element mandatory. USACE reported all buildings as “3” – Not yet evaluated on whether it meets the Guiding Principles. The actions set forth in this SSPP are integral to annual USACE FRPP reporting, as well as meeting the goals set forth in EO 13514. Guidelines for implementing the Guiding Principles within Civil Works do not exist as they do for Military Programs; they must be developed through the course of the next fiscal year.

**IIf. Goal 5: Regional and Local Planning**

**a. Goal Description**

EO 13514 §2(f)(i): Participate in regional transportation planning and recognize existing community transportation infrastructure.

EO 13514 §2(f)(ii): Align Federal policies to increase effectiveness of local energy planning for energy choices such as locally generated renewable energy.

EO 13514 §2(f)(iii): Ensure that planning for new Federal facilities or new leases includes consideration of sites that are pedestrian friendly, near existing employment centers, and accessible to

public transit, and emphasizes existing central cities, and, in rural communities, existing or planned town centers.

EO 13514 §2(f)(iv): Identify and analyze impacts from energy usage and alternative energy sources in all Environmental Impact Statements and Environmental Assessments for proposals for new or expanded Federal facilities under the National Environmental Policy Act.

EO 13514 §2(f)(v): Coordinate with regional programs for Federal, State, Tribal and local ecosystem, watershed, and environmental management .

**b. USACE Lead Organization(s)**

Planning and Policy Division (CECW-P); Directorate of Logistics (CELD-ZA); Engineering & Construction CoP (CECW-CE).

**c. Implementation Methods**

USACE will continue to emphasize collaboration with regional and local interests regarding programs for ecosystems, watershed, and environmental management. The Civil Works Directorate will embark on a comprehensive review of existing guidance to identify where revisions are necessary to incorporate EO13514. This effort, which will begin in 2010, will be completed in 2011. The necessary revisions are scheduled to be completed in 2012. With regard to other elements of this goal, within its existing authorities, USACE will participate in regional transportation planning and local energy planning initiatives.

The Civil Works Directorate will be embarking on significant changes to its policy and guidance to incorporate the revisions to the “Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and the related Principles and Standards (P&G).” Review and revisions to incorporate the requirements of this Executive Order may be accomplished at the same time depending on when the P&G is finalized. However, the requirements of this Executive Order and, when finalized, CEQ’s proposed NEPA “Guidance on Consideration of the Effects of Climate Change and Green House Gas Emissions” will be incorporated into our Planning Guidance Notebook (ER 1105-2-100) and other policy guidance as appropriate within the next 3 years even if the revisions to P&G have not been finalized. During 2011 USACE will issue interim guidance for all projects (not just new or expanded Federal facilities) to identify and analyze impacts associated with energy usage and alternative energy sources and other specific provisions of the executive order and CEQ’s final NEPA guidance regarding greenhouse gases.

As part of its Campaign Plan, USACE has committed to collaboration with partners and stakeholders to find holistic and sustainable solutions to water resources needs. Within Civil Works, the overarching strategy is Integrated Water Resources Management (IWRM), which focuses on water resource challenges and opportunities that reflect coordinated development and management of water, land, and related resources. At the same time, IWRM optimizes both economic services and environmental quality, ensures public safety, and provides for the sustainability of their associated ecosystems. Compliance with this executive order is consistent with this

commitment. To meet this goal, USACE will use a systems approach whenever possible. For larger studies and projects, this means that water resources planning and management should be watershed, in scale, using systems analysis methods and tools. Regional transportation will be considered and addressed in the study and environmental compliance documentation as appropriate as part of the integrated water resources management approach during planning efforts. However, all of these concepts and goals must be understood within the reality that the Civil Works program is limited to individual studies and projects; only as authorized and funded by Congress. It currently has few programmatic authorities.

Similar to other Federal agencies, USACE participates in Federal and local programs that encourage the use of mass transit and alternate means of transportation such as bicycles. It promotes teleworking arrangements for its employees (see discussion in Goal 2). It also considers the effects of project locations on transportation as part of the planning process for new facilities.

Currently, there is also no direct Congressional authority for participation in local energy planning, but as with transportation planning, utilization of alternative energy technologies could be considered as part of integrated water resources management, especially hydropower options.

**d. Positions**

Work force needs will be considered within the context of all the initiatives being proposed that demand staff attention. It is expected that most of the review and revision of Civil Works Policy guidance would be done with existing staff as a collateral duty.

**e. Planning Table**

**Table 2-5. Goal 5 Planning Table.**

<b>REGIONAL AND LOCAL PLANNING</b>	Units	FY 10	FY 11	FY 12	FY 13	....	FY 20
Specific targets have not yet been developed for this goal.					X	X	X

**f. Status**

Collaboration is ongoing and already included in guidance. The review to determine what additional changes to guidance are required will commence later this fiscal year.

**Iig. Goal 6: Water Use Efficiency and Management**

**a. Goal Description**

EO 13514 §2(d)(i): Reduce potable water consumption intensity by 2 percent annually through FY20, or 26% by the end of FY20 (baseline FY07) by implementing water management strategies including water-efficient and low-flow fixtures and efficient cooling towers.

EO 13514 §2(d)(ii): Reduce agency industrial, landscaping, and agricultural water consumption by 2% annually or 20% by the end of FY20 (baseline FY10).

EO 13514 §2(d)(iii): Consistent with State law, identify, promote, and implement water reuse strategies that reduce potable water consumption.

EO 13514 §2(d)(iv): Implement and achieve the objectives identified in the Environmental Protection Agency's stormwater management guidance.

**b. USACE Lead Organization(s)**

Civil Works Operations Division (CECW-CO), Directorate of Research & Development (CERD-ZB), Directorate of Logistics (CELD-ZA).

**c. Implementation Methods**

Because USACE has limited direct operational control over visitor activities in our campgrounds and day use facilities, USACE has chosen to exclude water consumption in recreation facilities from the targets associated with this goal. As a recreation provider, USACE is committed to providing quality facilities and services to accommodate the needs of our visitors. Accordingly, the SSPP includes initiatives to improve energy and water efficiency at recreation facilities and to positively influence visitors to support sustainable practices.

*Water Consumption*

An important part of the USACE approach to reducing potable water use by facilities will be through the high performance building requirements of EO 13514, including:

- Complying with the Guiding Principles for all new construction and major renovation of buildings
- Ensuring that at least 15% of DoD's existing buildings and building leases over 5000 sq ft meet the Guiding Principles (or a third-party certification system) by FY15
- Demonstrating annual progress toward 100% conformance with the Guiding Principles (or a third-party certification system) for the entire building inventory
- Operating, maintaining, and managing facilities to reduce water consumption.

One of the main avenues by which USACE envisions meeting Goal 6 is through implementing water efficiency programs that install water efficient toilets and urinals, low-flow faucets and showerheads, as well as other water use controls appropriate for facilities used by USACE personnel and visitors to USACE facilities. In FY10-11, USACE will work to identify and fund a number of energy and water evaluations, as required by DOE guidance issued pursuant to 42 USC 8253(f)(2) and (3), designed to characterize in detail USACE facility water consumption characteristics. One outcome of these studies will be a set of practices to improve water efficiency at USACE facilities. We will establish an environmental management program within the USACE environmental management system to track implementation of appropriate subsets of these practices across USACE facilities.

In addition, we will evaluate our water consumption data to identify and seize facility-specific opportunities for water-reducing investments. In FY10-11, USACE will work to improve and evaluate water consumption data from FY07 and FY08-09 to identify facilities that may offer water reduction opportunities far exceeding the water efficiencies gained by implementation of water-saving practices discussed above. Seizing these types of opportunities will require substantial

investments in resources, and careful consideration of benefits, costs, and risks – all of which is enabled by USACE budgeting processes, and informed by the broad scope of scientific, technical, and mission-based knowledge of USACE employees.

Another path to assist in achieving Goal 6 is to substitute non-potable, reclaimed, or rainwater for needs currently being met with potable water, especially landscaping and industrial uses. Reclaimed water is defined as previously used water that has been processed with at least a secondary level of wastewater treatment to produce high quality though not potable water. USACE will consider opportunities for water reuse in wastewater treatment systems it operates, and we will look into options for storage and use of rainwater in ways that simultaneously enable reductions in potable water use and compliance with the requirements of EISA §438 requirements.

#### *Storm Water Runoff Management*

Reducing the impacts of storm water runoff associated with new development and re-development helps to protect and sustain our water resources. In October 2004, the DoD issued Unified Facilities Criteria on Low Impact Development (LID) (UFC 3-210-10), a storm water management strategy designed to maintain the hydrologic functions of a site and to mitigate the adverse impacts of storm water runoff from DoD construction projects. In December 2007, Congress passed the Energy Independence and Security Act (EISA). Section 438 of the Act sets forth specific storm water management requirements for Federal development and re-development projects. It requires that any Federal entity sponsoring development or re-development of 5000 square feet or more “... shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the pre-development hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”

In December 2009, EPA’s Office of Water prepared Section 438 Technical Guidance on Implementing the Storm water Runoff Requirements for Federal Projects under Section 438. EPA developed this guidance based on knowledge gathered over the past 20 years of study on the effectiveness of conventional approaches to storm water quantity and quality management. That knowledge led to the conclusion that, “... conventional approaches to control runoff are not fully adequate to protect the nation’s water resources” (National Research Council 2008). EPA guidance states: “Implementation of Section 438 of the EISA can be achieved through the use of the green infrastructure/low impact development (GI/LID) infrastructure tools described in this guidance.”

The balancing of potential added cost for more-sustainable design/re-design and construction against decreased long-term operating costs and future sustainability goals is one of the agency challenges presented in Section I of this Plan.

USACE plans to partner with EPA, OSD, and the Military Departments in the development of general awareness and specialized storm water training. The general awareness training will be

broadly disseminated and the specialized training will be required construction training for, planners, engineers, architects, inspectors, contract managers, and related personnel. Using this training, USACE will develop or update storm water management related policies for USACE owned and operated facilities, as well as services (such as Engineering and Construction) provided by USACE to its customers. USACE will also work with OSD and the Military Departments to revise the 2004 Unified Facilities Criteria (UFC) 3-210-10 on Low Impact Development (LID) to reflect recent DoD storm water policy and incorporate EPA’s recent Technical Guidance design requirements for the use of GI and LID to manage the quantity and quality of storm water. In addition, USACE will continue working with EPA and other Federal agencies to incorporate storm water management requirements on Federal lands in the Chesapeake Bay watershed into the Federal Coordinated Strategy as required under EO 13508, Chesapeake Bay Protection and Restoration (2009).

**d. Positions**

We believe two full-time facility energy/water manager positions are required for HQUSACE based on application of criteria (one energy manager per 5 million GSF) cited in the FEMP Facility Energy Management Guidelines and Criteria for Energy and Water Evaluations in Covered Facilities, 25 November 2008.

**e. Planning Table**

**Table 2-6. Goal 6 Planning Table.**

<b>WATER USE EFFICIENCY &amp; MGMT</b>	Units	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	....	FY 20
Potable Water Reduction Targets (gal/sq ft reduction from FY07 base year)	%	6%	8%	10%	12%	14%	16%	....	26%
Planned Potable Water Reduction (gal/SF reduced from FY07 base year)	%	3	5	7	9	12	16%	...	26%
Industrial, Landscaping, and Agricultural Water Reduction Targets (gal reduced from FY10 base year)	%	-	2%	4%	6%	8%	10%	....	20%
Planned Industrial, Landscaping, and Agricultural Water Reduction (gal reduced from FY10 base year)	%	-	2%	4%	6%	8%	10%		20%

**f. Status**

*Water Consumption*

USACE developed an initial estimate of its FY07 facility water use intensity baseline during FY09 largely by gathering field-level water consumption data from FY07 hard-copy records. While 6 of 45 reporting USACE organizations had water use data stored in the official system of record (the

Army Energy and Water Reporting System), the vast majority of USACE water use data was not officially recorded. Similarly, for FY08 and FY09, most USACE water use data was developed based on field-maintained, hard-copy records. As a result, we still have considerable work to do in terms of standardizing data collection and submittal and improving data quality before we can report a sound engineering estimate of our FY07 water use intensity baseline. Improving USACE data quality and standardization is a major objective during FY10.

Based on data currently in-hand, the USACE water use intensity in FY07 was 0.107 gallons/square foot (Gal/SF), with a total consumption of roughly 1070 million gallons (MGal). USACE internal records indicate that water use intensity in FY08 was approximately 0.102 Gal/SF, with a total consumption of roughly 1020 MGal. This data suggests USACE may be moving in the right direction in terms of water use, but we cannot substantiate any conclusion about a trend in water use on the basis of the water consumption data currently available.

For industrial and irrigation uses of water, FY10 is the first year that USACE facilities will be asked to collect and submit this data. Characterizing USACE water usage and management practices, and identifying water management issues, will be an area of emphasis for FY10-11. We expect some USACE facilities with irrigation and industrial water usage will report water metering issues that will make separate reporting of potable and irrigation/industrial water usage difficult. Also, while many USACE facilities have implemented water efficiency measures such as water efficient toilets and urinals, and low-flow faucets and showerheads, USACE currently has no process in place to track such efforts on a USACE-wide basis.

#### *Storm Water Runoff Management*

The USACE plan for Sub-goal 6.d is to plan, design, and execute development and redevelopment construction projects in accordance with DoD policy memo, [DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act \(EISA\)](#), which was issued by DUSD (I&E) in January 2010 and the EPA Technical Guidance for Stormwater Runoff Requirements for Federal Projects under Section 438 of EISA, December 2009. The overall design objective for each project is to maintain predevelopment hydrology, prevent any net increase in storm water runoff, and manage the negative impacts to the natural water balance resulting from site development. The DoD defines “predevelopment hydrology” as the pre-project hydrologic conditions of temperature, rate, volume, and duration of storm water flow from the project site. EPA characterizes the consequences of site development impacts as: (1) increased volume of runoff, (2) increased peak flow of runoff, (3) increased duration of discharge, (4) increased pollutant loadings, and (5) increased temperature of runoff.

These provisions will be implemented in projects in the planning and pre-implementation phase where the nature of the project allows it to be added.

USACE responded to EO 13508, Chesapeake Bay Protection and Restoration (2009) with a regional CW perspective that aligned comprehensive watershed restoration planning efforts and integrated water resource management projects with the goals of the Executive Order. The wa-

tershed plans were developed in collaboration with Federal, State, local government and stakeholder groups and identified the full array of actions needed to achieve restoration objectives.

### **IIIh. Goal 7: Pollution Prevention and Waste Elimination**

#### **a. Goal Description**

EO 13514 §2(e)(i): Minimize the generation of waste and pollutants through source reduction.

EO 13514 §2(e)(ii): Divert at least 50% of nonhazardous solid waste, excluding construction and demolition debris, by the end of FY15;

EO 13514 §2(e)(iii): Divert at least 50% of construction and demolition materials and debris by the end of FY15.

EO 13514 §2(e)(iv): Reduce printing paper use and acquire uncoated printing and writing paper containing at least 30 percent postconsumer fiber.

EO 13514 §2(e)(v): Reduce and minimize the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of.

EO 13514 §2(e)(vi): Increase diversion of compostable and organic material from the waste stream.

EO 13514 §2(e)(vii): Implement integrated pest management and other appropriate landscape management practices.

EO 13514 §2(e)(viii): Increase agency use of acceptable alternative chemicals and processes in keeping with the agency's procurement policies.

EO 13514 §2(e)(ix): Decrease agency use of chemicals where such decrease will assist the agency in achieving greenhouse gas emission reduction targets under section 2(a) and (b) of this order.

EO 13514 §2(e)(x): Report in accordance with the requirements of sections 301 through 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. 11001 et seq.).

#### **b. USACE Lead Organization(s)**

Civil Works Operations Division (CECW-CO), Directorate of Research & Development (CERD-ZB), Directorate of Logistics (CELD-ZA), Engineering & Construction CoP (CECW-CE).

#### **c. Implementation Methods**

Because USACE has limited direct operational control over visitor activities in our campgrounds and day use facilities, USACE has chosen to exclude solid waste generation in recreation facilities from the targets associated with this goal. As a recreation provider, USACE is committed to providing quality facilities and services to accommodate the needs of our visitors. Accordingly, the SSPP includes initiatives to improve solid waste management and diversion at recreation facilities and to positively influence visitors to support sustainable practices.

### *Solid Waste Generation and Recycling at USACE Facilities*

USACE will initiate solid waste and recycling initiatives to achieve the EO 13514 goal of diverting 50% of its nonhazardous solid waste (excluding construction and demolition debris) by the end of 2015. Our initial focus will be implementing practices to estimate solid waste generation rates and establish recycling programs at all USACE facilities where it is practicable and cost effective. In situations where existing solid waste disposal contract arrangements do not support accurate quantification of solid waste, USACE will develop methods for estimating facility-specific solid waste generation, recycling, and off-site disposal (land filling) rates. As solid waste disposal and recycling contracts come up for renewal, USACE facilities will, where practicable and cost effective, include in the new contract requirements specifying quantification of solid waste generation and recycling rates. USACE will establish an environmental management program within its environmental management system to track the implementation of sustainable solid waste management practices as well as performance of solid waste reduction and recycling programs. Also, to the extent allowed by law, USACE will implement Qualified Recycling Programs (QRP) in accordance with DoD QRP guidance.

### *Reducing Use of Paper*

No solid waste reduction effort can be successful without addressing paper, which on average accounts for more than 60% of office waste. By the end of FY11, HQ USACE will issue a policy establishing reduction of paper as a priority and directing all USACE organizations to implement practices for minimizing the use of paper. Also by this time, we expect OSD will develop and issue DoD-wide guidance on effective strategies for reducing the use of paper, for example by encouraging the use of digital documents in lieu of paper, requiring printers with automatic duplexing capability to default to this setting, and modifying routine office tasks to reduce paper use. However, we cannot eliminate all paper copies of reports. These are still required for many purposes; it may be more efficient to have a minimum number of hard copies printed rather than having many individuals making personal copies.

### *Solid Waste and Recycling at USACE Recreation Facilities*

A preliminary analysis of solid waste generation at USACE facilities indicates that our campgrounds and day use facilities are orders of magnitude larger than the estimated USACE nonhazardous solid waste generation rate in FY08. Although we cannot directly control solid waste generation at our recreation facilities, we are looking into options to influence it. Specifically, as part of the USACE Recreation community's efforts to implement sustainable practices at our campgrounds and day use facilities, they are evaluating options for encouraging and enabling campers and visitors to reduce solid waste generation and increase recycling. The Recreation Strategic Plan, which we expect to complete by January 2011, will chart a course of action for USACE to improve solid waste management at USACE recreation areas.

### *Diversion of Construction and Demolition Debris*

USACE will initiate solid waste and recycling initiatives to achieve the EO 13514 goal of diverting 50% of construction and demolition materials and debris by the end of 2015. USACE will establish environmental management programs within its environmental management system to track the implementation and performance of sustainable solid waste management practices within construction and demolition activities at USACE facilities and at facilities where USACE is providing engineering and construction services to its customers. Existing regulations will be revised to ensure the goal of 50% C&D waste diversion is formally incorporated into the CW program.

**d. Positions**

At this time, there is no reliable process to determine how many personnel will be required to meet this specific goal.

**e. Planning Table**

**Table 2-7. Goal 7 Planning Table.**

<b>Pollution Prevention &amp; Waste Elimination</b>	<b>Units</b>	<b>FY10</b>	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15</b>
Non-Hazardous Solid Waste Diversion Targets (non C&D)	%	0%	10%	20%	30%	40%	50%
C&D Material & Debris Diversion Targets	%	0%	10%	20%	30%	40%	50%

**f. Status**

USACE already has policy and programs in place to divert C&D (construction and demolition) materials within its Military Program construction mission. New construction debris is routinely segregated, measured, and diverted to commercial recycling facilities or reconstituted for use on the construction site.

USACE has no formal policy in place to divert C&D debris within its Civil Works program per se; however, many USACE CW programs, by their very nature, achieve and/or exceed the intent of the stated goal. Many CW projects routinely use onsite materials, reconstitute them and make beneficial use of them in constructed civil works. For example, borrowed materials for embankment dams are obtained locally, processed onsite, and used in completed project features.

### **Iii. Goal 8: Sustainable Acquisition**

#### **a. Goal Description**

EO 13514 §2(h): Ensure that 95% of new contract actions including task and delivery orders, for products and services with the exception of acquisition of weapon systems, are energy-efficient (Energy Star or Federal Energy Management Program [FEMP] designated), water-efficient, bio-based, environmentally preferable, non-ozone depleting, contain recycled content, or are non-toxic or less toxic alternatives, where such products and services meet agency performance requirements.

#### **b. USACE Lead Organization(s)**

National Contracting Organization (NECT).

#### **c. Implementation Methods**

USACE will implement all Army and DoD policy and guidance related to sustainable acquisition and green procurement, and will develop its own policy, programs, and training as necessary to achieve the target. The Federal Procurement Data System (FPDS) and the DoD Standard Procurement System will be used as a source of data on contracts meeting these requirements, supplemented by our internal systems.

During FY11, the USACE will follow DoD in the development of standard contract language to reflect sustainable acquisition requirements. USACE intends to incorporate standard contract language and existing and new Federal Acquisition Regulation clauses into all new relevant contracts by FY12.

USACE will modify contract planning and development tools and forms to alert users, especially specification writers and requirements developers, to comply with sustainable acquisition requirements. In addition, USACE will modify tools, forms, and checklists used by Contracting Officers to ensure that contract documents such requests for proposals and solicitations comply with sustainable acquisition requirements.

USACE will improve the guidance it provides on procurement. During FY11, USACE will develop and disseminate guidance on how to address green product mandates and other sustainability requirements in procurement and contract audits, and considerations of green procurement mandates with Small Business Set-Asides. USACE will add guidance on approaches to green service and supply contracts and it will provide guidance specific to the Government purchase card program for integrating green procurement or sustainability requirements.

Because many purchasing actions are conducted according to specifications prepared by others, USACE will ensure that the Specification Preparing Activities (SPAs) have updated specifications that are in line with the requirements of EO 13514. USACE will identify the specifications applicable to its needs, which require review or updating, and it will develop a schedule by which the changes will be completed. The DoD will direct the SPAs to complete the work to incorporate the energy efficiency requirements of EPA 2005 by the end of calendar year 2011, which will

be incorporated into USACE actions. We will develop internal metrics to track the review of specifications for application of green procurement requirements or sustainability provisions.

A critical path to sustainable procurement is a rigorous review of progress and compliance. We will incorporate sustainable procurement into the internal procurement management reviews (PMRs) that the NCO conducts at its contracting offices; the goal here is to ensure that 100% of the internal PMRs will have incorporated sustainability in the course of a 3-year period.

To meet the 95% sustainable procurement goal, it will be necessary for USACE to integrate green procurement into all appropriate audit and training programs, and to ensure that training reaches personnel involved in the earliest stages of the procurement process. USACE will update existing procurement training courses and provide them, or equivalent Army or DoD training, annually to all relevant USACE personnel including:

- Technical and requirements planners
- Contracting specialists
- Contracting and procurement officers
- Personnel requisitioning products or services through any source of supply (e.g., facilities managers, construction managers, fleet managers, and information technology managers)
- Government-wide commercial purchase card holders
- Environmental managers.

USACE will continue to make the online Defense Acquisition University training mandatory for all personnel involved in requirements pertaining to procurement, and it will recommend updates and/or revisions to the DAU training as necessary to ensure the training makes it clear for all types of users the actions required of them to be in compliance with sustainable acquisition requirements.

USACE will also provide targeted training for the following audiences:

- Contracting Officer's Representatives. Their training will be augmented with a procurement conducted sustainability module.
- Personnel Preparing Specifications. Training will be provided on green procurement requirements and on how to properly use contracting mechanisms with respect to green specifications.
- Purchase Card Holders. Training will be updated to ensure that the green procurement provisions are adequately addressed.
- Purchase Card Managers at the Headquarters and FOA Level. Potentially, we are considering requiring expanded training, beyond the 2 hours DAU training, to provide a more comprehensive understanding of green mandates and the implementation of a conforming program for the unique purchase card business area, including audit provisions tailored for sustainability.

USACE has created a training course entitled “Purchasing Green,” which is offered through the *PROSPECT* training programs at the Huntsville, AL professional development center. Its purpose is described as follows: “*This class provides engineers, specification writers, contract administrators, and environmental personnel instruction on incorporating green purchasing into government contracting and meeting the requirements of mandatory Federal procurement preference programs.*”

**d. Positions**

At this time, there is no reliable process to determine how many personnel will be required to meet this specific goal.

**e. Planning Table**

**Table 2-8. Goal 8: Planning Table.**

<b>SUSTAINABLE ACQUISITION</b>	<b>Units</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>	<b>....</b>	<b>FY 20</b>
New Contract Actions Meeting Sustainable Acquisition Requirements	%	50%	95%	hold	hold	hold
Energy Efficient Products (Energy Star, FEMP-designated, and low standby power devices)	%	TBD once a federal measurement system is available.				
Water Efficient Products	%					
Biobased Products	%					
Recycled Content Products	%					
Environmentally Preferable Products/Services (excluding EPEAT)	%					
SNAP/non-ozone depleting substances	%					

**f. Status**

USACE is in the process of integrating sustainability into its acquisitions by developing sustainability criteria to guide researchers, developers, and program managers to make more environmentally sustainable decisions from an array of alternatives that meet performance requirements. The products being developed are: a set of sustainability factors to be considered at key milestones in the acquisition process; guidance on the types of lifecycle costs that need to be considered when analyzing alternatives, making tradeoffs, and developing designs; and guidance on how to weigh or score various non-cost factors, especially in service contracts. The first phase of the project, which began in FY10, is benchmarking the best practices in industry and other government agencies.

**IIj. Goal 9: Electronic Stewardship and Data Centers**

**a. Goal Description**

EO 13514 §2(i)(i): Ensure procurement preference for EPEAT-registered electronic products.

EO 13514 §2(i)(ii): Establish and implement policies to enable power management, duplex printing, and other energy-efficient or environmentally preferable features on all eligible agency electronic products.

EO 13514 §2(i)(iii): Employ environmentally sound practices with respect to the agency's disposition of all agency excess or surplus electronic products.

EO 13514 §2(i)(iv): Ensure the procurement of Energy Star and FEMP designated electronic equipment.

EO 13514 §2(i)(v): Implement best management practices for energy-efficient management of servers and Federal data centers.

**b. USACE Lead Organization(s)**

Directorate of Corporate Information (CECI).

**c. Implementation Methods**

IAW with AR 25-1 computing services require the purchase of energy-efficient computer equipment. All purchases of microcomputers, including PCs, monitors, and printers, will meet the Environmental Protection Agency Energy Star and green requirements for energy efficiency per EO 13423 and EO 13514.

USACE will establish an internal policy within the next 6 months that will promote the use of power management and duplex printing on all eligible electronic products. Currently most of the USACE network printers that have the capability to duplex are configured to default to duplex printing although no policy exists.

IAW AR 25-1, the screening, redistribution, and disposal of IT equipment are completed through the Defense Reutilization and Marketing System (DRMS). DRMS is the DOD-wide program for asset visibility, resource sharing, and asset redistribution. The Defense Logistics Agency is the responsible official of DRMS for DOD. The process for disposal of IT equipment is consistent with the process used for all other excess property.

DRMS supports EO 12999 through the DOD Computers for Learning Program. In accordance with Executive Order 12999, surplus computer equipment can be donated to schools and educational nonprofit organizations. The school/nonprofit organization must request surplus computers by submitting a letterhead memo to include the name, address, telephone number, POC, and for nonprofit organizations, the type of educational program it will be used to support.

Per DOD policy, all hard drives of unclassified computer equipment leaving the custody of DOD must be overwritten, degaussed, or destroyed in accordance with the associated security risk of the information contained within the drive.

Currently there is not a policy from the Department of Army on implementation of best management practices. Department of Army has issued a data call to answer the memo signed by

the Federal CIO, Mr. Vivek Kundra, on 26 February 2010. USACE will be participating in the Department of Army’s response to this memo and will comply with associated Army policy when developed.

USACE has worked with the various applications developers and support teams to migrate from an environment where multiple smaller SUN systems are used to an environment where high levels of sharing and virtualization are in place using SUN M9000 systems. USACE is also looking at the “power-off” features of VMware to support those applications where a large number of servers operate in a pool. In this way, as workload decreases, customer sessions can be moved to fewer servers and those servers not in use can be powered off until workload increases to a point where they need to be used. There are FY11 and FY12 approved initiatives to modernize systems at the two processing centers to increase capability, better support virtualization, and increase system overall usage. In addition, there are other initiatives either funded or awaiting funding approval associated with centralizing additional applications from USACE sites. USACE will continue to study the current plans and anticipated mission demands of our data centers to examine options for footprint reductions.

**d. Positions**

No additional positions are required.

**e. Planning Table**

**Table 2-9. Goal 9 Planning Table.**

<b>ELECTRONIC STEWARDSHIP &amp; DATA CENTERS</b>	Units	FY 10	FY 11	FY 12	FY 13
% of device types covered by current Energy Star specifications that must be energy-star qualified	%	85%	90%	95%	hold
% of electronic assets covered by sound disposition practices	%	90%	95%	100%	100%
% of cloud activity hosted in a data center*	%	0%	30%	60%	hold
% of agency data centers independently metered or advanced metered and monitored on a weekly basis*	%	50%	90%	100%	hold
Reduction in the number of agency data centers* – USACE already reduced its data centers down to two and will not be consolidating further based on Army guidance.	%	0%	0%	0%	hold
% of agency, eligible electronic products with power management and other energy-environmentally preferable features (duplexing) actively implemented and in use	%	95%	95%	100%	hold
% of agency data centers operating with an average CPU utilization of 60-70%*	%	15%	50%	75%	hold
% of agency data centers operating at a PUE range of 1.3 – 1.6*	%	50%	50%	50%	hold
% of covered electronic product acquisitions that are EPEAT-registered	%	95%	95%	95%	hold
% of agency data center activity implemented via virtualization*	%	5%	30%	40%	hold

**f. Status**

USACE reduced its number of data centers several years ago to two processing centers. These two processing centers have been under a server upgrade freeze due to A76 efforts in the past few years. On completion of the A76 process, the freeze was lifted. In FY09 and FY10 USACE has replaced and has ordered replacements for many of the aging servers at the two processing centers. Specifically, in FY09, new HP Blade servers were purchased and installed at the ratio of one new server for two old servers. This replacement resulted in at least a 50% savings in the footprint, and energy both to run and cool the devices.

**IIIk. Goal 10: Agency Innovation**

**a. Goal Description**

This innovation goal is designed to capture USACE sustainability initiatives that do not fit neatly within Goals 1-9 or that we execute through reimbursable funding from our customers. The sustainability outcomes supported by USACE on behalf of a Federal customer will be accounted for in the customer’s SSPP, hence only short descriptions are listed in Goal 10b below.

- a. Innovations Supporting Civil Works
  - o Climate Change Adaption for Water Resources
- b. Innovations Supporting Military Programs
  - o Innovations Not Related to a Particular Goal
  - o Innovations Related to Goal 1-3: GHG and Energy Reduction
  - o Innovations Related to Goal 4: High Performance Sustainable Design/Green Buildings
  - o Innovations Related to Goal 5: Regional and Local Planning
  - o Innovations Related to Goal 6: Improve Water Use Efficiency and Management
  - o Innovations Related to Goal 7: Pollution Prevention and Waste Elimination

**Table 2-10. Goal 10 Planning Table.**

AGENCY INNOVATION	Units	FY 10	FY 11	FY 12	...	FY 20
Specific targets have not yet been developed for this goal.					X	X

*Innovations Supporting Civil Works*

**Climate Change Climate Change Adaption for Water Resources**

Responses to Climate Change Program (RCC). In FY10-14, the RCC is developing and beginning to implement practical, nationally consistent, and cost-effective policies, methods, and approaches for effective adaptation of our projects, systems, and programs to climate change. The RCC is developing and conducting vulnerability stress-tests within the Civil Works (CW) Operations and Maintenance (O&M) portfolio of constructed and natural projects with a focus on highest priorities and the existing portfolio. The results of the vulnerability assessments will assist in prioritizing further actions. Climate change adaptation pilot projects that span the project life cycle and business lines will be conducted in river basins, coastal regions, and ecosystem projects. The

lessons learned will be used to improve the vulnerability assessment methods and in the development of an adaptation performance evaluation method. This ultimately will improve water operations and planning methodologies for climate uncertainty, and will provide support for regulators dealing with climate change in permitting decisions.

IPET/HPDC Lessons Learned Implementation Team. The Team has had PDTs working on assessing our existing flexibility in reservoir regulation, assessing USACE capabilities to adaptively manage our water resources projects, and reviewing sustainability principles in the context of USACE projects and programs. During FY10 and FY11, we will publish a number of reports, including: “Flexibility for USACE in Reservoir Regulation,” “Summary of Existing Adaptive Management Authorities, Policies and Applications,” “Technical Guide for Adaptive Management,” “Review of Sustainability Principles in the Context of USACE Activities,” “Recommended Sustainability Definition and Principles for the U. S. Army Corps of Engineers,” and “Incorporating Effects of Incremental Changes to USACE Systems.” Other activities include several sustainability pilots in various phases of the project life-cycle.

Sustainable Water Partnership Planning. USACE, through the South Atlantic Division, has been developing new partnerships, among states and other water planning and management stakeholders, to address higher variability in water availability in the southeastern United States.

Global Change Sustainability (GCS) Program. In FY11, USACE proposes to begin the GCS program, which addresses the sustainability and resilience of built infrastructure and the natural environment to global changes, including demographic shifts, changing land use/land cover, climate change, and changing social values and economic conditions. All of these changes can combine in unpredictable ways to result in potentially surprising or abrupt changes that can pose a threat to public health and safety, the Nation’s water resources infrastructure, and natural ecosystems. The GCS will provide a proactive, nationally consistent and regionally sensitive framework of actions that will reduce the risks of global change to USACE projects in the future. Proposed FY11 activities include: building knowledge and capacity for sustainable response to global changes; incorporate new and changing information and tools into our water resources management for long-term sustainability; continue and improve collaboration to improve resilience; integrate adaptation activities with climate change mitigation strategies; and test new methods that provide resilience in the face of global change, to include updated guidance, processes, tools, and methods.

#### *Innovations Supporting Military Programs*

##### **Innovations Not Related to a Particular Goal**

Center for the Advancement of Sustainability Innovations (CASI). CASI was established by USACE in 2006 to promote sustainable approaches within USACE and across the military services; CASI has activities (forums, projects, reports) related to most of the goals in EO 13514 including most of the projects noted in this Innovations goal. CASI information is available through URL: <https://casi.erd.c.usace.army.mil/>

Decision Framework for Incorporation of Green/Sustainable Practices into Army Remediation Projects. The USACE is currently incorporating green and sustainable practices into environmen-

tal restoration efforts at both the program and project level. Green and sustainable practices are those that decrease the environmental footprint of a project. Environmental footprint is defined as “the impacts on environmental media and society that are a direct or indirect consequence of performing the remedial action.” The decision framework, consistent with the 2009 Defense policy on green remediation, provides a roadmap for incorporation of green/sustainable practices across all phases of USACE environmental remediation projects.

Climate Change Impacts on Defense Assets in Alaska. A workshop was conducted by USACE in Anchorage in July 2009, focused on understanding the impacts of climate change on military and civil works activities in Alaska. Key topics included climate impacts affecting built infrastructure, evaluating the Arctic coastline to identify optimum location for ports or shore-based facilities to support U.S. military operations and understanding climate change impacts on military training activities. Research projects from USACE, Army, and Defense program will be addressing these topics.

Native American Perspectives on USACE Missions – A Cultural Immersion Course. Native Americans have historically held to the “seven generations” rule, meaning that all decisions should take into account the impact on seven generations into the future. This course supports the USACE Environmental Operating Principles to achieve: (1) awareness of sustainable options and programs; (2) alternative ideas to protect and preserve natural and cultural resources; and (3) an understanding of the environment from a cross-cultural perspective.

Sustainable Forward Military Operations. Sponsored by the Army Studies Program, AEPI, and the Engineer School, USACE is supporting the Army and other services in promoting sustainability in all phases of military operations, from humanitarian assistance and reconstruction through peacekeeping, stability, and combat operations. This includes sustainable forward basing operations, and enhancing coordination and communication between multiple U.S. services, agencies, and multi-national partners. Several efforts are underway to improve the safety of soldiers and civilians, and enhance mission effectiveness, by reducing the logistics the water and fuel requirements for and the waste generated by forward military operations.

Range Support Center (RSC). A USACE multi-district organization that implements a regional approach to the execution of range maintenance sustainability and military munitions support services (M2S2) projects. The RSC performs all phases of work including design, management, oversight, and quality assurance for Military Munitions Response Program (MMRP), range maintenance, and other environmental and/or construction projects requiring M2S2 support. Projects have been executed at active, inactive, closed, transferring, and transferred ranges as well as sites with munitions and explosive of concern (MEC)

### **Innovations Related to Goal 1-3: GHG and Energy Reduction**

Greenhouse Gas (GHG) Military Installation Footprint. Over the last several years, studies have been conducted with DoD and Army sponsorship and USACE oversight to inventory the GHG emission sources and quantities from military base operations. The outcomes of these studies have provided a framework for Army-wide estimates of GHG emissions.

FY13 1391 Programming Document. USACE is supporting the Army to develop energy models for six standard facility designs to provide an alternative 1391 programming document allowing the Army to build more energy efficient systems and structures into its facilities.

FY13 MILCON Energy Conservation Design. Working across Centers of Standardization and among the various building types, USACE supports ACSIM/IMCOM in reducing the resources needed to ensure buildings optimize energy conservation measures at the least capital expense and commissioning cost.

Energy-Efficient Communities. USACE is pursuing collaboration with a new International Energy Agency (IEA) initiative for energy-efficient communities. The main objective of this effort is to use an integrated, multidisciplinary approach as a basis for providing tools, guidelines, recommendations, best-practice examples, and background material for designers and decision makers in all fields concerned with reducing energy use and greenhouse gas emissions.

Energy Conservation in Buildings and Community Systems. Sponsored by HQ IMCOM, this project's goal is to influence the decision making process that determines the use of energy-saving measures in building retrofits of government buildings such as offices, hospitals, large one-story production facilities, maintenance shops, and specialty warehouses.

Energy Engineering Analysis Program (EEAP). USACE is leading an Army installation energy analysis of energy use, to include an analysis of return-on-investment of different alternatives and an analysis of financing mechanisms for energy upgrades. Programming for future year demonstrations to prove ROI will include both RDTE and SRM sources.

Modeling Net Zero Energy (NZE) Installations. NZE is a USACE research project, sponsored by Army research, to develop a test bed to optimize energy generation, reuse, and conservation strategies facilities and complexes of facilities with complementary energy consumption profiles.

**Innovations Related to Goal 4: High Performance Sustainable Design/Green Buildings Sustainable Design Directory of Expertise (SDD-DX).** Established in 2007, this sustainable design resource, led by Savannah District and CASI, provides sustainable design guidance and training for all of USACE. There are now over 180 accredited LEED professionals across USACE. Sustainable Design classes are regularly conducted through the USACE training center.

Design, Monitoring, and Validation of a High-Performance Sustainable Building. Demonstration of "whole building" design processes using off-the-shelf building materials and components to achieve higher building performance at no additional first cost. This DOD sponsored project, supported by USACE, is related to learning transferable approaches from a community emergency services building being built at Fort Bragg as a design/bid/ build project.

How Green is Green? This project, sponsored by AEPI, will identify institutional barriers and policy gaps that prevent the Army from getting maximum sustainability value for the money invested in sustainable facilities, materials, and furnishings, and examine the values being obtained from these investments.

Center of Expertise (CX) for Support of Sustainable Design / High Performance Buildings. The CX will provide technical expertise, analysis, coordination, support, and training for USACE activities in support of sustainable design and development of high performance buildings and life cycle costing. Services will be available to military and civil mission areas and other Federal agencies on a reimbursable basis.

Leadership in Energy and Environmental Design (LEED). USACE supports Army LEED policy to ensure the sustainability of Military Construction Army (MCA) projects. LEED replaced the Sustainable Project Rating Tool (SPiRiT) as of the FY08 program. Army Family Housing projects continue to be rated using SPiRiT. Starting with the FY08 program, Army policy requires all vertical construction projects with climate-controlled facilities to achieve the Silver level of LEED-NC. This requirement applies worldwide to all construction on permanent Army installations, Army Reserve, Army Readiness Centers, and Armed Forces Reserve Centers, regardless of funding source and includes BRAC.

Sustainable Engineering Program Managers. In recognition of the need to ensure appropriate and proactive engineering support for sustainable technologies, such as renewable energy projects, major civil works projects and large facility complexes, Engineering and Construction Bulletin No. 2009-16 (9 July 2009) recommended that each USACE Division designate or recruit and hire a sustainable engineering program manager. Many Divisions have full or part time staff in this role.

#### **Innovations Related to Goal 5: Regional and Local Planning**

Army Real Property Master Planning. USACE supported the Army in revising Army Regulation (AR) 210-20 (16 May 2005), which defines the real property master planning concept and requirement and establishes policies and responsibilities for implementing the real property master planning process for Army communities. The AR calls for integration of Army operations in a sustainable manner with local and regional governments through policies and procedures.

Strategic Sustainability Assessment (SSA) GeoPortal (<http://www.learm.uiuc.edu/ssa/>). The Army SBIR program sponsored ERDC and a private firm to develop a geoportal for regional analysis tools which are now available to the public via a web portal. Demonstrations using these SSA capabilities are underway for NEPA, base realignment and other analysis at multiple locations.

Chesapeake Bay Regional Analysis. On 12 May 2009, President Obama issued Executive Order (EO) 13508 for protecting and restoring the Chesapeake Bay with a call to harness public and private resources “to protect and restore the health, heritage, natural resources, and social and economic value of the Nation’s largest estuarine ecosystem.” The Department of Defense (DoD) has many military bases in the region as well as numerous civil works projects and was assigned responsibilities with this executive order, leading in some areas and supporting in others. USACE districts and labs, supported by ACSIM, are actively participating in the Army Chesapeake Bay Strategy, working towards improved regional analysis for the bay area, including LID on the numerous regional military bases.

Multi Vision Integration to Action. Vision to Action is a collaborative tool developed by EPA Region 4 and USACE as an innovative interview and visualizing technique to capture and integrate individual and community visions. The Vision to Action tool is geared for use within an open community forum; the goal is to first listen and obtain diverse individual visions and assessments (whatever they might be) and then to integrate them into regional or community visions.

#### **Innovations Related to Goal 6: Improve Water Use Efficiency and Management**

Army Water Conservation Collaboration Web Portal. USACE is developing, with Army sponsorship, a web-based portal on water conservation and efficiency. In addition, a Public Works Technical Bulletin (PWTB) is being drafted to describe the contents and use of the Water Conservation Collaboration Web Portal.

Implementing a Water Conservation Program on Army Installations PWTB. This document will present “how to” options for implementing a water conservation program at Army installations. This guidance will enable installations to determine the potential for water conservation at their facilities as part of a sustainable water program.

Installation Water Audit Guidance PWTB. This project, funded by the Army and conducted by USACE, will describe findings (to include installation guidance) of ongoing research in preparing installation water demand estimates.

Regional Water Assessment Guidance PWTB. This project, funded by the Army and conducted by USACE, will describe findings of ongoing research in preparing regional water availability sustainability assessments using online, national-level GIS data sets.

Smart Water Conservation Systems for Irrigated Landscapes. These systems were developed to validate the retrofit of existing landscape irrigation systems with smart water conservation systems to reduce potable water consumption for landscape irrigation by 70% at two test sites, integrate weather tracking controllers, sensors, harvest condensate and capture data on cost and performance. Funded through ESTCP.

Low-Impact Development (LID) Demonstrations/Validations to Address Stormwater Requirements at Fort Gordon, GA. This study, sponsored by Ft. Gordon, performed a demonstration, cost analysis, and validation of LID options at Fort Gordon, and provided results to other installations.

Graywater Application for Army Installations PWTB. Funded by the Army and conducted by USACE, this study will produce a Technical Bulletin to provide information on potential for gray water use for Army installations.

Army Installation Water Sustainability Assessment. This project, sponsored by AEPI, is applying the water assessment methodology developed in the Army Installations Water Sustainability Study to 10 CONUS installations. The method includes developing a regional water budget for each installation and region. An initial phase, conducted in 2009, developed a pilot for two locations. Available at [http://www.cecer.army.mil/techreports/ERDC-CERL\\_TR-09-38/ERDC-CERL\\_TR-09-38.pdf](http://www.cecer.army.mil/techreports/ERDC-CERL_TR-09-38/ERDC-CERL_TR-09-38.pdf)

### **Innovations Related to Goal 7: Pollution Prevention and Waste Elimination**

Environmental Benefits of Reusing Wood Building Materials. U.S. Department of Agriculture (USDA) Forest Products Laboratory is sponsoring this project to conduct research into reusing wood materials to reduce the adverse environmental impacts of demolition and landfills.

Construction and Demolition (C&D) Waste Reduction – Technical Guidance and Technology Transfer. USACE is involved with reducing waste from the Army’s construction, demolition, and renovation programs. Developed guidance can be found at the Whole Building Design Guide (WBDG) website as USACE Public Works Technical Bulletins (PWTBs) and a WBDG Resource Page on C&D waste reduction.

Developing a National Strategy for Construction and Demolition Materials Recovery. USACE is participating in the work of the EPA National Strategy for Construction and Demolition Materials Recovery Workgroup. The workgroup is tasked with identifying barriers to more efficient building materials recovery (i.e., salvage, reuse, and recycling), research methods to remove or avoid these barriers, recommend actions, and develop implementation plans for these actions.

## Section Three: USACE Self Evaluation

### I. Evaluation Table

**Table 3-1. Evaluation Table.**

Does your plan provide/consider overarching strategies and approaches for achieving long-term sustainability?	Yes
Does your plan identify milestones needed for implementation?	Yes
Does your plan align with your agency's FY11 budget submission?	No
Is your plan consistent with your agency's FY11 budget and appropriately aligned to reflect your agency's planned FY12 budget submission	Yes
Does your plan integrate existing EO and statutory requirements into a single framework and align with other existing mission and management related goals to make the best use of available resources?	Yes
Does your plan provide methods for obtaining data needed to measure progress, evaluate results, and improve performance?	Yes

**Does your plan align with your agency's FY11 budget submission?** – CW budget development is a bottom-up process that begins 2 years prior to the year of execution. By the time this USACE SSPP was under development, the FY11 budget was already finalized. USACE organizations will look for opportunities during FY11 budget execution to support the sustainability goals. Energy audits will receive particular emphasis in FY11 to better prioritize and program for future energy efficiency initiatives. Guidance for necessary changes in FY12 budget development was distributed to the field on 30 April 2010.

### II. Planned Actions

#### Jul-Dec 2010

- Establish baselines within Federal reporting systems.
- Complete hydropower modernization study.
- Complete solar panel installations in San Francisco and Sacramento Districts.
- Establish policy for electronics power management and duplex printing.
- Complete acquisition of 300 hybrid vehicles.
- Build sustainability actions into the FY12 CW budget.

#### Jan – Jun 2011

- Pilot American Society of Civil Engineers' sustainability rating system Version 1.0 for unoccupied infrastructure at one or more projects.
- Conduct 1<sup>st</sup> sustainability management review.
- Update SSPP.

- Solidify FY13 budget guidance.
- Define USACE “covered facilities” and complete energy/water audits at 25% of the covered facilities.
- Complete one major vessel repowering.

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## Appendix B: Acronyms

<b>Term</b>	<b>Spelled Out</b>
ACSIM	US Army Assistant Chief of Staff for Installation Management
AEPI	Army Environmental Policy Institute
ARRA	American Recovery and Reinvestment Act
ASA(CW)	Assistant Secretary of the Army for Civil Works
BRAC	Base Realignment and Closure
CASI	Center for Advancement of Sustainability Innovations
CEFMS	Corps of Engineers Financial Management System
CEQ	Council on Environmental Quality
CMR	Command Management Review
CoP	Community of Practice
CONUS	Continental US
CW	Civil Works
DART	Development of Agency Reduction Target
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoE	Department of Energy
DRMS	Defense Reutilization and Marketing System
DTOD	Defense Table of Distances
EC	Engineer Circular
E&C	Engineering and Construction
EKO	Engineering Knowledge Online
EO	Executive Order
EOP	Environmental Operating Principles
EPA	Environmental Protection Agency
ER	Engineer Regulation
ERDC	Engineer Research and Development Center
ESTCP	Environmental Security Technology Certification Program
FEMA	Federal Emergency Management Agency
FEMP	Federal Energy Management Program
FERC	Federal Energy Regulatory Commission
FY	Fiscal year
GCS	Global Change Sustainability
GHG	Greenhouse Gas
GSA	General Services Administration
GSF	Gross square feet
IMCOM	US Army Installation Management Command

<b>Term</b>	<b>Spelled Out</b>
IPET	Interagency Performance Evaluation Task Force
IPlan	Implementation Plan
IWR	Institute of Water Resources
LEED	Leadership in Energy and Environmental Design
MDC	Marine Design Center
MILCON	Military Construction
MP	Military Programs
MSC	Major Subordinate Command
MT	Metric tons
NED	National Economic Development
NEPA	National Environmental Policy Act
NEQ	National Environmental Quality
NOAA	National Oceanic and Atmospheric Administration
NTV	Non-Tactical Vehicle
O&M	Operations and Management
OMB	Office of Management and Budget
OSE	Other Social Effects
PAO	Public Affairs Office
PDT	Product Delivery Team
PROSPECT	Proponent-Sponsored Engineer Corps Training
PWTB	Public Works Technical Bulletin
QRP	Qualified Recycling Programs
RCC	Response to Climate Change
RED	Regional Economic Development
REMIS	Real Estate Management System
ROI	Return on Investment
RPAO	Real Property Accountable Officer
SBIR	Small Business Innovative Research
SMS	Strategic Management System
SPiRiT	Sustainable Project Rating Tool
SSO	Senior Sustainability Officer
SSPP	Strategic Sustainability Performance Plan
SST	Strategic Sustainability Team
T&D	Transmission and Distribution
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USGS	US Geological Survey
USSC	USACE Sustainability Steering Committee
WBDG	Whole Building Design Guide

