Green Parks Plan

2010-2020

April 9, 2010

NPS Key Environmental Indicators

- **0.5%**

  The percent of total electricity consumed by the National Park Service in 2008 that was generated by renewable energy.

- **4.6%**

  The percent of NPS park units designated as Climate Friendly Parks.

- **43**

  The number that account for 75% of the NPS's total annual energy consumption.

- **100**

  The total kilowatt capacity of photovoltaic systems already installed in parks that cannot be used due to legal impediments with local utilities.

- **24**

  Total number of NPS buildings certified under the Leadership in Environmental and Energy Design - Green Building rating System.

- **19,000**

  That number of U.S. households that, on average, consume an equal amount of energy (1.8 million MMBTU) as the NPS annually.

- **$44,461,474**

  The average annual cost of the NPS's energy consumption.

- **274,852,949**

  The number of visits to parks in 2008—and the number of interpretation and education opportunities on climate change and sustainability.

- **75,000**

  The total metric tons of green house gas emissions reductions pledged from Climate Friendly Parks as of 2010

By 2020, the National Park Service will…

- **Achieve carbon neutrality for NPS operations**
- **Reduce the energy intensity of its existing facilities by 40%**
- **Reduce water consumption of its existing facilities by 30%**
- **Educate 150 million Americans on the threats posed by climate change to parks and opportunities for citizens to reduce greenhouse gas emissions at home, work, and in their communities**
- **Incorporate sustainability goals into every NPS employee's annual performance plan**
- **Require green plans from vendors on all high-value contracts**
- **Engage 1,000 youth annually in sustainability projects in parks and support the development of a new CCC—the Youth Climate Change Corps**

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Introduction

Sustainable Facilities Vision

The NPS will preserve park resources unimpaired for the enjoyment of current and future generations by demonstrating leadership in sustainable design, operations, and asset management, implementing and showcasing exemplary practices at every site and every level of the organization.

OVERVIEW

Since its inception in 1916 the National Park Service (NPS) has been a world leader in protecting natural resources for current and future generations. The NPS has preserved many of the planet's greatest natural and cultural treasures and in the process been a model of resource management. Now the NPS faces a new challenge as it seeks to become a leader in the sustainable management of its facilities and operations. With over 275 million annual visitors from around the world, the NPS can use these places to demonstrate sustainable operations as a response to changing climatic conditions and related environmental issues.

When the numbers of parks were few, park facilities were primitive, travel was not yet motorized and the sustainable management of facilities and operations was a simpler task. Today the NPS manages the largest number of constructed assets of any civilian agency in the federal government. In total the NPS operates and maintains over 67,000 structures—spread across 393 parks units—that account for over 66 million square feet of constructed space and consume an equivalent amount of energy as 19,000 U.S. households.[1] Though the NPS has been designing new facilities and renovating existing buildings in a much more sustainable manner, the overall building portfolio generates a sizeable environmental footprint in terms of greenhouse gas (GHG) emissions, air pollution, wastewater, storm water runoff, solid waste, indoor air pollution, and the disruption of natural sounds and night skies.[2] With such a diverse portfolio ranging from visitor centers to historic buildings to constructed waterways to utility systems, many of which are located in ecologically sensitive and historic areas, the NPS faces unique challenges in developing a comprehensive strategy for the sustainable management of its facilities.

To address these challenges and fulfill the mission of the Service, which is to preserve America's natural and cultural treasures, the NPS Facility Management Program (FMP) has developed this ***Green Parks Plan*** to set the NPS on a course to become a leader in the environmentally responsible stewardship of its facilities and related operations.

Blue Ridge Parkway Destination Center was certified LEED gold in 2008 and is one of the 24 LEED certified buildings in the NPS

In decades past the NPS understood its conservation mission to encompass the natural and cultural resources within park boundaries. Today we recognize that environmental degradation that begins outside of parks, most notably climate change, is causing clear and lasting damage to resources inside our nation's parks. The unavoidable conclusion is that the NPS can no longer achieve its preservation mission by simply managing resources within parks. The Service must demonstrate the threat of climate change and related environmental impacts on parks, and through education and leadership in sustainable practices foster change that will contribute to increased environmental stewardship beyond park borders.

In keeping with these principles, the NPS FMP has coordinated the development of a strategic plan for the sustainable management of NPS facilities and operations—*the Green Parks Plan*. This plan sets a collective vision for integrating environmental stewardship into facility management in a manner consistent with the mission of the NPS, as well as all relevant laws, executive orders, and Secretarial and Director's Orders.

BACKGROUND

Many champions in parks and regions across the NPS have established their own sustainability programs that promote the mission to "preserve unimpaired the natural and cultural resources" under the NPS's supervision. From renewable energy to alternative transportation to green procurement, many NPS facility managers and staff have become experts in sustainability.

Recognizing the wealth of expertise and knowledge already existing within the NPS, the Park Facility Management Division (PFMD) hosted a workshop in Golden, CO, in August 2009 that brought together key staff from across the NPS to launch a Servicewide sustainability strategic planning effort. This group was also joined by sustainability experts from other agencies. This strategic plan builds on the ideas discussed at the Golden meeting.

As such, this *Green Parks Plan* is a collaborative product of staff from parks, regions, and national support offices. Subject matters experts from Facility Management, Construction, Fleet Management, Planning, Natural and Cultural Resources, Youth Programs, and the Office of Strategic Planning have contributed to the plan, along with partners from other federal agencies and non-governmental organizations.

ORGANIZATION AND SCOPE OF THE STRATEGIC PLAN

This plan establishes 38 primary goals for improving facility performance across the parks and takes into account every dimension of the facility life cycle—from planning, design, and construction to operations, maintenance, and disposition. While the scope of the plan is centered on the impact of facilities on the natural environment and human welfare and productivity, the FMP has designed the plan with the hope that it will be incorporated into a Servicewide plan encompassing all NPS functions.

Some of these goals address issues beyond the scope of facility management, while some others address issues that lie at the intersection of facility and non-facility operations. These objectives should be understood as recommended goals that the FMP will seek to pursue in consultation with managers of other programs.

The broad scope is the result of an effort to develop a plan that is visionary, comprehensive of all NPS facility operations, and sufficiently detailed to guide implementation over the next decade. Through this comprehensive and far-reaching plan the NPS intends to demonstrate a strong commitment to leadership in sustainability.

GREEN PLAN GOAL CATEGORIES

Climate Change Mitigation & Facility Adaptation: Reduce GHG emissions from NPS operations and make preparations for modifying the location and configuration of facilities in response to climate change.

Energy Management: Improve the energy efficiency of NPS facilities, reduce energy consumption for operations, and using renewable energy.

Water Management: Reduce the consumption of potable water in NPS operations, reduce wastewater flows, and mitigate stormwater runoff.

Fleet & Transportation Management: Right-sizing the NPS fleet, promoting sustainable vehicle use, and increasing the use of public transportation to, from, and within parks.

Environmental Purchasing, Materials, Supplies, & Waste Management: Improving the sustainability of all materials used across the NPS and throughout the material life cycle.

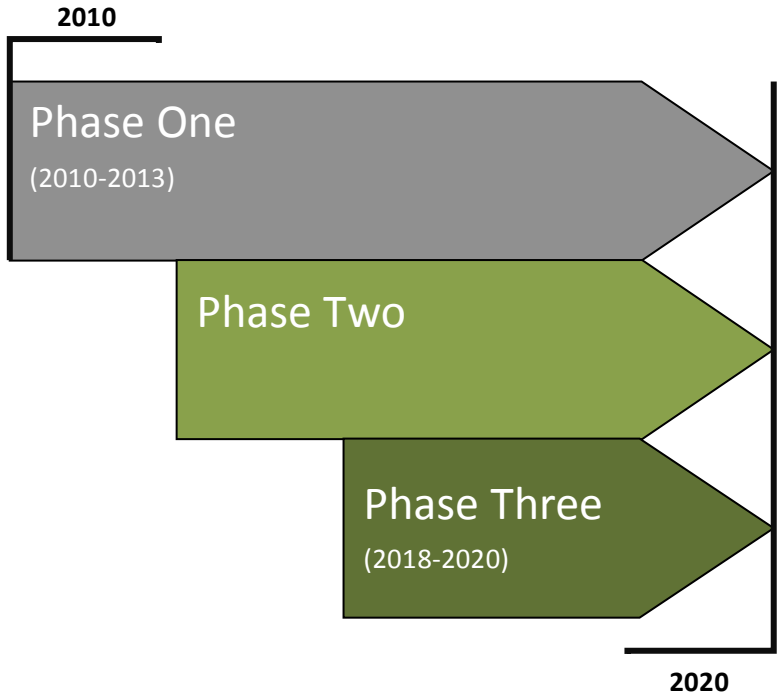
Healthy Indoor Environments: Advancing human health, welfare, and productivity through improved management of indoor spaces.

Outdoor Environmental Quality & Sustainable Sites: Mitigating the impacts of NPS operations on the external environment.

Best Practices in Sustainable Facility Management: Promoting sustainability best practices across the NPS.

THE PLANNING HORIZON

The planning horizon for this plan extends to the year 2020. While some of the goals can be achieved by 2016 or sooner, others will take longer to fulfill. The planning horizon of 2020 is being used due to recognize that it will take a decade for the NPS to realize its vision and accomplish all of its major sustainability goals. For example, the planning, design, and construction of the LEED Platinum-certified Eielson Visitor Center in Denali National Park took seven years to complete. The planning and construction timeline for water and wastewater infrastructure is 20 to 40 years.[3] These and other major hazards, such as wildland fire, require planning now for the NPS to be prepared to sustain mission critical operations in the decades ahead.



This plan presents two target years for each goal, 2016 and 2020. As noted above, 2020 represents the long-term planning horizon. In contrast, 2016 is used as an interim target year because it will be the year of the NPS Centennial anniversary, a major milestone for focusing sustainability efforts. An example of the use of these two target years in the plan is found at objective CC 1.6 *("NPS will achieve operational carbon neutrality. For those GHG emissions not eliminated through mitigation efforts, NPS will evaluate, identify, and implement appropriate mechanisms for offsetting remaining emissions"*).

The 2016 target is to offset 75 percent of the GHG emissions remaining at the end of 2015. The 2020 target is to offset 100 percent of the GHG emissions remaining at the end of 2019. Although some goals found in this plan will not be achieved until 2016 or 2020, many others will be achieved far sooner, and implementation is already in progress. For example, the Park Facility Management Division, in coordination with the regional offices, has initiated the execution of objective EP 2.2 (*"NPS will conduct a comprehensive energy audit in all covered facilities beginning in 2010 and thereafter once every four years"*).

To enable parks to approach goal implementation in a manageable way, the FMP will pursue implementation of the strategic plan in three phases spanning the period from FY2010 to 2020.

Phase One efforts will focus on 75 action items (objectives, implementation actions, and recommended policies) from the plan that can be achieved in full or significantly advanced between 2010 and 2013. Goals addressing climate change response, energy conservation, and organizational best practices will be the primary focus in 2010.

A new photovoltaic system at Joshua Tree National Park is ready to operate but is sitting idle due to issues with the connection agreement with the local utility

[1] Asset data is from the NPS's FY2008 Federal Real Property report. The NPS consumes on average 1.8 million MBTU annually. The Energy Information Administration reports that the average U.S. household consumes 94.9 MBTU.

[2] According to the General Services Administration's 2008 *Federal Real Property Portfolio* the NPS holds 67,342 constructed assets. The next closest agency is the Department of Transportation with 58,637 constructed assets. Based on total square footage the NPS has the sixth largest asset portfolio of the civil agencies.

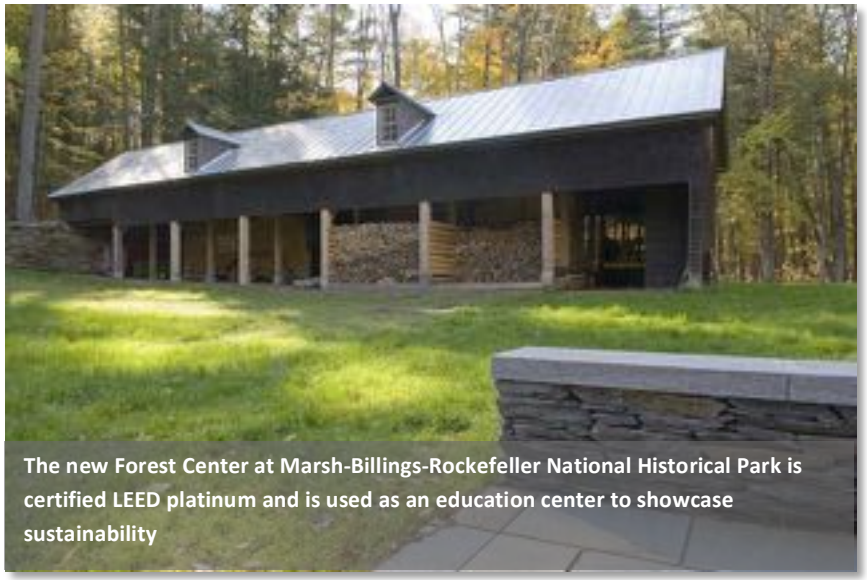
[3] C*onfronting Climate Change: An Early Analysis of Water and Wastewater Adaptation Costs,* CH2M Hill, Inc., Washington, DC, available at www.nacwa.org.

Overarching Implementation Actions

In addition to the actions found in the goal categories, a series of overarching implementation actions have been identified that regional and Washington offices should undertake to implement the Phase One goals of the *Green Parks Plan*. These implementation actions are described below.

Establish Regional Green Teams and Subject Matter Experts

- Establish Green teams in every regional office to help facilitate implementation of the Green Parks Plan in 2010. Regional green teams will include representatives of the FMP and other NPS program representatives to the greatest extent possible.
- Establish green teams in every park by 2012 to facilitate implementation of the *Green Parks Plan*.
- Establish a program to certify employees as sustainability subject matter experts by 2013.



The new Forest Center at Marsh-Billings-Rockefeller National Historical Park is certified LEED platinum and is used as an education center to showcase sustainability

Integrate the Green Parks Plan, Environmental Management Systems, Climate Action Plans and Park Asset Management Plans, and Streamline Reporting

- Provide guidance to parks on integrating the goals of the *Green Parks Plan*, park EMSs, and park Climate Action Plans by the end of 2010.
- Incorporate sustainability considerations into Park Asset Management plans by 2012.
- Develop an organizational EMS for the Washington and regional offices by the end of 2012.
- Conduct a comprehensive review of existing sustainability reporting processes to identify inefficiencies and areas for improvement in 2010. 2011.
- Provide sustainability reports to all parks on an annual basis that compare reported consumption to previous years beginning in 2010.
- Develop a new comprehensive guidance manual on best practices in sustainable design and operations of facilities by 2011.

Enhance Communications on Sustainability Efforts

- Use existing outreach tools (such as the *PFMD Update*, Inside NPS, EMP Library) to communicate sustainability efforts Servicewide in 2010.
- Create an internal bulletin board and forum website for staff to communicate on sustainability issues and coordinate materials reuse in 2011.
- Launch internal and external websites to communicate goals, accomplishments, best practices, and solicit feedback in 2011.
- Collaborate with the Partnerships & Visitor Experience Directorate to prioritize sustainability projects that provide opportunities to interpret the impact of climate change on parks and other challenges in sustainable management, as well as educate visitors about practical steps they can take to promote sustainability, including through the Do Your Part for Climate Friendly Parks Program.

Leverage New Funding for Implementing the Green Parks Plan

- Collaborate on the identification of alternative financing strategies to fund sustainability projects and distribute guidance on these strategies to parks by 2011.
- Identify methods to use external fund sources (e.g., GHG offsets) to undertake GHG mitigation projects by 2013.

Gather Feedback from Visitors and NPS Employees

- Collaborate with the Workforce Management Directorate to conduct a survey in 2010 or 2011 of NPS employees to evaluate their awareness of sustainability issues and inform future strategic planning and implementation actions.
- Collaborate with a partner organization to conduct a survey in 2010 or 2011 of park visitors to identify target areas of education on sustainability and climate change and evaluate the efficacy of NPS education efforts.

Eliminate Legal Impediments to Sustainable Development, Including the Activation of Renewable Energy Systems

- Collaborate with the Office of the Solicitor of the Department of the Interior to complete legal evaluations of certain impediments to improved sustainability in 2010–2011, including the following:
    - the need for grid inter-tie agreements with public utilities to activate existing renewable energy generation systems in parks that are linked to utility systems;
    - power purchasing agreements between parks and utilities;
    - state and municipal constraints on the reuse of gray water;
    - restraints on bonding and other alternative financing mechanisms;
    - legal and policy concerns about GHG credit trading within the NPS.

- The NPS will make recommendations to the Director and the Secretary, as necessary, to pursue corrective legislation or orders to address the impediments identified above.

Internal Certification Program

- Identify and develop a phased, internal certification program based on the framework of the *Green Parks Plan* to guide parks through implementation, formally recognize the accomplishment of sustainability goals, and encourage friendly competition between parks.

Recommended Actions for Incentivizing Change

To fully implement this plan, particularly mandated goals related to energy and water conservation and GHG mitigation, the following recommendations will be sought to promote environmental stewardship across the National Park System. These recommendations are presented below.

Leadership in Sustainability

- The NPS should formally establish sustainability as a guiding value of the Service.
- The NPS should appoint a Senior Sustainability Officer who will report to the Director and coordinate sustainability efforts across the Service.
- The NPS should complete a Servicewide Strategic Green Plan encompassing all NPS operations.

Employee Engagement

- All NPS offices and units should incorporate sustainability goals into every NPS employee's annual performance work plan and evaluation.
- The NPS should launch a Servicewide web-based stakeholder engagement program designed to integrate sustainable practices into employee behavior.
- The NPS should expand the Environmental Leadership Award(s). The Service should recognize sustainability efforts great and small with a range of meaningful awards that are complemented by broad recognition for recipients within their professional communities
- The NPS should seek additional opportunities to promote the recognition of its employees by external organizations for achievements in sustainability by 2011.

Interpretation & Education

- The NPS should develop specific GHG mitigation and climate change Interpretation & Education goals for strategic goal categories by 2011.

Project Prioritization and Selection

- The NPS should develop a process for increasing the allocation of funds to sustainability projects in 2011.
- Park project submissions should be required to define sustainable advantages beginning in 2012.
- All parks should be required to report legally mandated previous year data using a centralized sustainability reporting tool before receiving approval for new facility projects, beginning in 2014.

Adapt Goals for Historic Assets

- The NPS should adopt or create a method to apply principles of sustainable facility management, including the reduction of GHG emissions, to the operations, maintenance, and preservation of historic buildings by 2013.

Contracting

- The NPS should train sufficient contracting staff to efficiently manage the execution of sustainability-related contracts, including grid inter-tie agreements, by 2012.
- The NPS should require commercial services contracts to comply with the goals of the Green Parks Plan, where applicable, beginning in 2013.

Training

- The NPS should establish a training program that educates all NPS employees on the importance of sustainability and the NPS sustainability strategic goals, provides information on existing programs and resources, and encourages employees to incorporate sustainability management best practices into their work by 2011.

Strategic Planning Framework: Categories, Goals & Targets

Climate Change Mitigation & Facility Adaptation

From the loss of glacial ice and critical habitat to increased threats from drought, wildland fire, and sea level rise, climate change is one of the foremost challenges the NPS faces. This strategic goal category is presented first to emphasize the critical importance of the NPS response to climate change. The goals of this category are designed to fulfill the directives of Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, Interior Secretary Salazar's Order 3289 on climate change, and the emerging facility-related goals of the NPS Climate Change Response Steering Committee. One of the key goals in this category calls for a 50 percent annual reduction in Servicewide GHGs by 2016 and a 75 percent reduction by 2020. It also establishes a goal for the NPS to achieve complete "carbon neutrality" (zero net GHG emissions) by 2019 for its remaining GHG emissions. This goal builds on a pioneering goal set by the Pacific West Region that all of its parks will attain carbon neutrality by 2016.

A key element of the agency's response to climate change has been the development of the Climate Friendly Parks program. Parks that enter the program are provided assistance in developing "carbon footprints" and Climate Action Plans for reducing GHG emissions and educating park visitors on measures that all Americans can take to reduce GHG emissions. This plan calls for all parks to enter the Climate Friendly Parks program and complete Climate Action Plans by 2013. Other goals in this category are intended to mobilize the Service to prepare for the adaptation of facilities to changing climate conditions, such as the loss of inland fresh water, coastal flooding, longer and more intense wildland fire seasons, and extreme weather events. In conjunction with the Division of Park Planning & Special Studies, a goal has been set that encourages planning teams to integrate climate change considerations relative to facility locations into long-range planning documents, such as General Management Plans. The PFMD will lead a Servicewide inventory of park facilities that are impacted or threatened by climate change and develop adaptation plans for seriously threatened facilities.

The GHG emission reduction goals in this category are complemented by dozens of other goals spread across the other goal categories. One of the overarching principles of this plan is that our climate change response should be integrated as broadly as possible into the Service's sustainability efforts.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

CC—Climate Change Mitigation & Facility Adaptation (CC)			
Goal #	Objective	2016 Target	2020 Target
CC 1: NPS will reduce GHG emission and achieve operational carbon neutrality.		30% GHG reduction	50% GHG reduction
CC 1.1	**COLLABORATIVE OBJECTIVE:** All parks, training centers, and support offices will enter the Climate Friendly Parks program and will report GHG emissions (Scope 1, Scope 2, and select Scope 3). [4]	Achieved in 2012	Achieved in 2012

CC—Climate Change Mitigation & Facility Adaptation (CC)			
Goal #	Objective	2016 Target	2020 Target
CC 1.2	All parks, training centers, and support offices will complete a Climate Action Plan (final stage).	Achieved in 2013	Achieved in 2013
CC 1.3	NPS will establish a Servicewide GHG emissions baseline estimate in 2010 using 2008 (or best available data) as a baseline year, and revise that amount annually with reported actual data.[5]	100% of parks reporting annually	100% of parks reporting annually
CC 1.4	NPS will consider GHG emissions relative to facilities and operations as appropriate in long range planning documents.[6]	100% of facility planning documents	100% of facility planning documents
CC 1.5	NPS will reduce operational Scope 1, Scope 2, and select Scope 3 GHG emissions 5% annually beginning in 2010 and achieve a cumulative reduction of at least 50% by 2020 from a 2008 baseline.[7]	35% GHG reduction	50% GHG reduction
CC 1.6	**COLLABORATIVE OBJECTIVE:** NPS will achieve operational carbon neutrality (net zero GHG emissions). For those GHG emissions not eliminated through mitigation efforts (See CC 1.5), NPS will evaluate, identify, and implement appropriate mechanisms for offsetting remaining emissions.[8]	75% of remaining emissions offset (2015 baseline)	100% of remaining emissions offset (2019 baseline)
CC 1.7	**COLLABORATIVE OBJECTIVE:** NPS will issue a comprehensive no idling policy for all vehicles in parks (other than emergency, law enforcement, and other tactical vehicles).	Achieved in 2010	Achieved in 2010
CC 1.8	All new building construction with a gross square footage (SF) equal to or greater than 5,000 SF will conform to the directives of the NPS Sustainable Buildings Implementation Plan (SBIP).[9]	100% of applicable NC	100% of applicable NC
CC 1.9	All major renovations of buildings with a gross square footage equal to or greater than 5,000 SF and with a construction cost of at least 50% of the building's current replacement value, as reported in the Facility Management Software System (FMSS), will conform to the directives of the NPS SBIP.[10]	100% of applicable MR	100% of applicable MR
CC 1.10	All new building construction and major renovations of buildings equal to or less than 5,000 SF, and all other repairs or alterations of NPS buildings regardless of size, will conform to the directives of the NPS SBIP to the greatest extent possible.	100% of all remaining MR and NC, and 100% of all maintenance projects	100% of all remaining MR and NC, and 100% of all maintenance projects
CC 2: NPS will adapt facilities in response to climate change.		All at-risk facilities have adaptation plan	All at-risk facilities have adaptation plan
CC 2.1	NPS will complete a Servicewide inventory of park facilities that are impacted or threatened by climate change.	Achieved in 2012	Achieved in 2012

CC—Climate Change Mitigation & Facility Adaptation (CC)			
Goal #	Objective	2016 Target	2020 Target
CC 2.2	NPS will evaluate at-risk facilities identified from the inventory.	Achieved in 2014	Achieved in 2014
CC 2.3	NPS will develop a facility adaption plan for 100% of parks with facilities seriously threatened by climate change.	Achieved in 2015	Achieved in 2015
CC 2.4	NPS will consider integrating climate change considerations relative to the location of facilities in long range planning documents.[11]	100% of facility planning documents	100% of facility planning documents
CC 2.5	All General Management Plans that are newly initiated shall incorporate climate change considerations relative to facility design and location.	100% of new GMPs	100% of new GMPs
CC 3: NPS will educate Americans on the threats posed by climate change to parks and opportunities to reduce GHG emissions.		100 million visitors educated	150 million visitors educated
CC 3.1	**COLLABORATIVE OBJECTIVE:** NPS will educate Americans on the threats posed by climate change to parks and opportunities to reduce GHG emissions.	100 million visitors	150 million visitors
CC 3.2	**COLLABORATIVE OBJECTIVE:** NPS will ensure that every park that receives a Climate Friendly Park designation has clear and consistent signage that highlights climate friendly features throughout the park.	50% of Climate Friendly Parks	100% of Climate Friendly Parks

Energy Management

The production of energy to heat, cool, and light buildings and operate water utility systems is one of the largest contributors to GHG emissions in the United States. Buildings consume 37 percent of the energy and 68 percent of the electricity produced annually in the United States.[1] The byproducts of fossil fuel energy generation—including GHG emissions, nitrogen oxide, and sulfur dioxide—have detrimental impacts on parks. These impacts include the loss of coral reefs in U.S. Virgin Islands National Park, the shrinking of glaciers in Kenai Fjords, smog that frequently blankets Big Bend National Park in summer months, and acid rain that has damaged mountain plant communities in Shenandoah National Park. To contribute to a national effort to make buildings more energy efficient, this plan presents five goals with 19 associated objectives for the NPS to better understand and improve its energy performance. In the process of achieving these goals, the NPS will also seek to educate park visitors about the impacts of fossil fuel generation on parks and measures citizens can take to make their homes, workplaces and communities more energy efficient.

Improved energy performance has been a focal point of recent federal laws and executive orders concerning the operation of federal facilities. One of the most far-reaching mandates is a requirement of the Energy Independence and Security Act of 2007 that all federal agencies reduce energy intensity 30 percent by 2015. This mandate and others are addressed here.

This goal category appears immediately after Climate Change & Facility Adaptation because of the direct link between improved energy performance and the reduction of GHG emissions. For example, the 40 percent reduction in Servicewide energy intensity called for by goal EP 1 below will be a major contributing factor to the achievement of a 50 percent reduction in GHG emissions called for in objective CC 1.5 under Climate Change Mitigation & Adaptation.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

EP—Energy Performance			
Goal #	Objective	2016 Target	2020 Target
EP 1: NPS will conserve energy and reduce Servicewide energy intensity.		30% energy intensity reduction	40% energy intensity reduction
EP 1.1	NPS will establish a 2003 energy consumption baseline using reported data and statistical modeling.[12]	Achieved in 2010	Achieved in 2010
EP 1.2	NPS will freeze energy consumption at 2008 levels in 2012 (and reduce energy consumption below 2008 levels in subsequent years [see EP 1.3 below]).	Achieved in 2014	Achieved in 2014

[1] *New Construction and Major Renovation Version 2.2 Reference Guide*, 3rd edition, Washington, DC: U.S. Green Building Council, October 2007,

EP—Energy Performance			
Goal #	Objective	2016 Target	2020 Target
EP 1.3	NPS will reduce the Servicewide energy intensity (BTUs consumed per square foot) by an average of 5% or more annually of its existing facilities from the 2003 baseline.[13]	35% reduction	40% reduction
EP 1.4	NPS will establish regional and park-specific annual energy intensity reduction goals beginning in 2012 to meet a 5% or better annual reduction at the regional level.	30% reduction	40% reduction
EP 1.5	NPS will complete comprehensive lighting retrofits in parks for the purpose of energy conservation, with a minimum of five parks in each region and all parks defined as covered facilities.	60% of parks	100% of parks
EP 1.6	**COLLABORATIVE OBJECTIVE:** All NPS facility leases will comply with all energy mandates from EISA, E.O. 13423, and the Guiding Principles.[14]	Achieved 2011	Achieved 2011
EP 1.7	NPS will eliminate all prime power diesel generators.	100% reduction in diesel generators	100% reduction in diesel generators
EP 1.8	NPS will develop a process for reviewing each decision made on large capital energy investment to ensure compliance and report process to OMB.[15]	100% of large capital energy investments	100% of large capital energy investments
EP 2: NPS will conduct energy evaluations at the top energy-consuming parks.		Top 100 energy-consuming parks evaluated every 4 years	Top 100 energy-consuming parks evaluated every 4 years
EP 2.1	NPS will ensure that parks report energy data on an annual basis starting in 2011 using an enhanced, user-friendly reporting tool.[16]	100% of parks reporting annually	100% of parks reporting annually
EP 2.2	NPS will conduct a comprehensive energy audit in all covered facilities beginning in 2010 and thereafter once every four years.[17]	100% of covered facilities audited every 4 years	100% of covered facilities audited every 4 years
EP 2.3	NPS will conduct a comprehensive energy audit in the next 60 highest energy-consuming parks beyond the covered facilities in a four year period.	100% of next 60 parks audited every 4 years	100% of next 60 parks audited every 4 years
EP 3: NPS will install meters and track utility usage in parks to the "maximum extent practicable" Servicewide.		80% of electrical load sub-metered	80% of electrical load sub-metered
EP 3.1	All parks will have an energy metering plan.	Achieved in 2014	Achieved in 2014

EP—Energy Performance			
Goal #	Objective	2016 Target	2020 Target
EP 3.2	All new construction (NC) and major renovation (MR) projects must be metered (utility owned or NPS owned sub-meter) at the building level for electric, natural gas, thermal energy, and steam.[18]	100% of NC and MR	100% of NC and MR
EP 3.3	NPS will meter (utility owned or NPS owned sub-meter) all buildings to the "maximum extent practicable" Servicewide.[19]	80% of electrical load sub-metered	80% of electrical load sub-metered
EP 4: NPS will build all new buildings and major renovations to maximize energy efficiency.		55% reduction of fossil fuel consumption	100% reduction of fossil fuel consumption
EP 4.1	New buildings will be designed to be 30% more efficient than required by national energy standards.[20]	100% of NC	100% of NC
EP 4.2	Major renovations will be designed so that any renovated building uses at least 20% less energy than it consumed in 2003.[21]	100% of MR	100% of MR
EP 4.3	New buildings and major renovations will minimize the consumption of fossil fuel-generated energy beginning in 2010. Performance will be measured against a 2003 baseline for a similar building for new construction or from an existing building's 2003 baseline for major renovations.[22]	55% reduction of fossil fuel consumption	100% reduction of fossil fuel consumption
EP 5: NPS will consume energy from sources that are renewable and sustainable.		20% of total energy consumption	30% of total energy from renewables
EP 5.1	NPS energy consumption Servicewide will come from sources that are renewable and sustainable. This amount will increase annually by at least 3% through 2020.[23]	20% of total energy consumption	30% of total energy consumption
EP 5.2	Sustainable energy consumption required by EP 5.2 will come from new renewable sources.[24]	50% of sustainable energy use	50% of sustainable energy use

Water Management

The national and global supply of fresh water has diminished significantly in recent decades, and this trend will likely continue due to drought and other climatic changes. The impact of water scarcity is already being felt at a number of parks, such as Lake Mead National Recreation Area, where a precipitous drop in lake levels has left park marina facilities far above the water line where they stand useless. To contribute to the responsible use of fresh water supplies and preserve fresh water in-flows in rivers and streams, as well as groundwater supplies, the NPS will demonstrate leadership in water conservation, gray water reuse, rainwater capture, and the reduction of wastewater conveyance. Reducing NPS's consumption of fresh water will also help mitigate GHG emissions, as the energy used to treat and pump water is a significant source of GHG emissions.

A cornerstone goal of this category is a 3 percent annual reduction in Servicewide water consumption. Another key goal is a 35 percent reduction in wastewater generation by 2020. To begin work toward these targets, it will be necessary first for the NPS to establish baseline levels of water consumption and wastewater conveyance. To further improve water consumption monitoring, the agency will conduct water audits at all parks defined as "covered facilities" in 2010, and by 2014 all parks should have a water metering plan.

A set of six objectives in this category has been established to improve stormwater management in parks. The intent of these objectives is to limit the disruption of natural stormwater flows that result from development, mitigate the pollution of water bodies from pollution carried in stormwater runoff, and promote the capture of stormwater for productive use in facilities through rainwater harvesting.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

WC—Water Conservation & Management			
Goal #	Objective	2016 Target	2020 Target
WC 1: NPS will conserve potable water (non-irrigation).		20% reduction of potable water use	30% reduction of potable water use
WC 1.1	NPS will establish a water consumption baseline using reported data and statistical modeling in 2010. NPS will use 2007 data to establish baselines of potable water use.[25]	Achieved in 2010	Achieved in 2010
WC 1.2	NPS will freeze water consumption at 2008 levels in 2014 (and reduce water consumption below 2008 levels in subsequent years [see WC 1.3 and 1.4 below]).	Achieved in 2014	Achieved in 2014
WC 1.3	NPS will reduce use of potable water from its existing facilities by an average of 3% annually from the 2007 baseline and establish regional and park-specific targets using audit results beginning in 2012.[26]	20% reduction	30% reduction
WC 1.4	NPS will issue or adopt design standards and best practices for gray water reuse.	Achieved in 2014	Achieved in 2014
WC 1.5	**COLLABORATIVE OBJECTIVE:** NPS will follow park guidelines for the use of native plant species in	100% of	100% of

WC—Water Conservation & Management			
Goal #	Objective	2016 Target	2020 Target
	landscaping near facilities.	appropriate plants	appropriate plants
WC 2: NPS will conserve potable water for irrigation.		15% reduction of potable water used for irrigation	25% reduction of potable water used for irrigation
WC 2.1	NPS will establish a water consumption baseline using reported data and statistical modeling in 2010. NPS will use 2010 data for irrigation water use.[27]	Achieved in 2010	Achieved in 2010
WC 2.2	NPS will reduce use of potable water for irrigation by an average of 2% annually from the 2010 baseline and establish regional and park-specific targets using audit results beginning in 2012.[28]	15% reduction	20% reduction
WC 3: NPS will conduct water evaluations at the top water-consuming parks.		Top 100 water-consuming parks evaluated every 4 years	Top 100 water-consuming parks evaluated every 4 years
WC 3.1	NPS will ensure that parks report energy data on an annual basis starting in 2011 using an enhanced, user-friendly reporting tool.[29]	100% of parks reporting annually	100% of parks reporting annually
WC 3.2	NPS will conduct a comprehensive water audit in all covered facilities beginning in 2010 and thereafter once every four years.[30]	100% of covered facilities audited every 4 years	100% of covered facilities audited every 4 years
WC 3.3	NPS will conduct a comprehensive water audit in the next 60 highest water-consuming parks beyond the covered facilities in a four-year period.	100% of next 60 parks audited every 4 years	100% of next 60 parks audited every 4 years
WC 4: NPS will install water meters and track usage in parks to the "maximum extent practicable" Servicewide.		80% of water use metered	80% of water use sub-metered
WC 4.1	All parks will have a water metering plan by 2014.	Achieved in 2014	Achieved in 2014
WC 4.2	All new construction and major renovation projects must be metered (utility owned or NPS owned sub-meter) at the building level for water.[31]	100% of NC and MR	100% of NC and MR
WC 4.3	NPS will meter (utility owned or NPS owned sub-meter) all buildings to the "maximum extent practicable" Servicewide.	80% of water use metered	80% of water use sub-metered
WC 5: NPS will reduce generation of wastewater.		20% reduction of wastewater	30% reduction of wastewater

WC—Water Conservation & Management			
Goal #	Objective	2016 Target	2020 Target
WC 5.1	NPS will establish a 2003 wastewater production baseline using reported data and statistical modeling.	Achieved in 2011	Achieved in 2011
WC 5.2	NPS will reduce generation of wastewater Servicewide annually from the 2003 baseline.[32]	20% reduction	30% reduction
WC 6: NPS will reduce stormwater runoff from existing buildings.		XX% of stormwater volume at pre-park levels or better (TBD)	XX% of stormwater volume at pre-park levels or better (TBD)
WC 6.1	**COLLABORATIVE OBJECTIVE:** NPS will establish park-level goals for stormwater capture, infiltration, and runoff reduction.	Achieved in 2014	Achieved in 2014
WC 6.2	**COLLABORATIVE OBJECTIVE:** NPS will reduce stormwater runoff volumes from existing buildings, parking areas, maintenance yards, and walkways to levels matching those present at the formation of the park.[33]	XX% of stormwater volume at pre-park levels or better (TBD)	XX% of stormwater volume at pre-park levels or better (TBD)
WC 6.3	NPS will implement all environmental audit recommendations that relate to stormwater management.	75% of audit findings implemented	100% of audit findings implemented
WC 7: NPS will reduce stormwater runoff from new construction and major renovations.		15% reduction from pre-formation rates	25% reduction from pre-formation rates
WC 7.1	NPS will establish stormwater mitigation best practices for new construction and major renovation projects.	Achieved in 2014	Achieved in 2014
WC 7.2	NPS will integrate stormwater mitigation best practices into new construction and major renovations projects.	50% of projects include 75% of best practices	100% of projects include 75% of best practices
WC 7.3	All new construction and major renovations will be designed to prevent any stormwater runoff in excess of the amount occurring at the site before development.	Achieved in 2016	Achieved in 2016

Fleet & Transportation Management

The use of gasoline in vehicles is now responsible for over 50 percent of the annual GHG emissions in the United States. Other air pollutants produced by vehicles contribute to the formation of smog, and oil leaks from conventional automobiles contribute to the pollution of fresh water bodies through stormwater runoff. To significantly reduce its GHG emissions and achieve carbon neutrality, the NPS must reduce vehicle miles traveled (VMTs) by park employees (excluding tactical vehicles) and transform its fleet to a new generation of low GHG-emitting vehicles.

Among the noteworthy goals of this category are a 25 percent reduction in Servicewide petroleum fuel use by 2020; installation of electric vehicle recharging stations in parks for visitor vehicles; establishment of employee bicycle sharing programs in parks; attainment of carbon neutrality for official travel by 2016; and issuance of a no idling policy for all vehicles in parks (other than tactical vehicles).

The single greatest source of GHG emissions in parks comes from visitor vehicles. The NPS can address this class of emissions by educating visitors on the impacts of climate change on parks, providing incentives to travel to parks by public transportation or in low GHG-emitting vehicles, and by expanding visitor transit systems in parks, where feasible.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

FT—Fleet & Transportation Management			
Goal #	Objective	2016 Target	2020 Target
FT 1: NPS will right-size the fleet.		20% reduction in # of vehicles	30% reduction in # of vehicles
FT 1.1	**COLLABORATIVE OBJECTIVE:** NPS will have a right-sizing analysis of its entire fleet every five years and identify the minimum number and type of vehicles needed to accomplish the park mission (add into the Climate Friendly Parks process).	Right-sizing analysis done for 100% of fleet every five years	Right-sizing analysis done for 100% of fleet every five years
FT 1.2	**COLLABORATIVE OBJECTIVE:** NPS will reduce the size of the total fleet (number of vehicles) from the 2009 baseline (not including visitor transportation vehicles).[34]	20% reduction in # of vehicles	30% reduction in # of vehicles
FT 2: NPS will increase the use of high-efficiency vehicles.		15% total reduction in petroleum fuel use	25% total reduction in petroleum fuel use
FT 2.1	**COLLABORATIVE OBJECTIVE:** NPS will acquire low GHG-emitting automobiles and light trucks beginning in 2011 whenever feasible.[35]	100% of newly acquired vehicles	100% of newly acquired vehicles
FT 2.2	NPS will work with the GSA to identify and reduce barriers that prevent parks from obtaining high-efficiency and alternative energy vehicles, and develop recommendations to OMB.	Achieved in 2011	Achieve in 2011

FT—Fleet & Transportation Management			
Goal #	Objective	2016 Target	2020 Target
FT 2.3	NPS will provide preferred parking in parks for low GHG-emitting employee vehicles.	5% of total parking spaces per unit or office	10% of total parking spaces per unit or office
FT 2.4	**COLLABORATIVE OBJECTIVE:** NPS will establish a revolving fund to augment the purchase of low GHG-emitting vehicles.	Achieved in 2014	Achieved in 2014
FT 2.5	**COLLABORATIVE OBJECTIVE:** NPS will create a training program that promotes the efficient use of fleet vehicles.	Achieved in 2014	Achieved in 2014
FT 2.6	**COLLABORATIVE OBJECTIVE:** NPS will create an incentives program that promotes the efficient use of fleet vehicles.	Achieved in 2014	Achieved in 2014
FT 2.7	**COLLABORATIVE OBJECTIVE:** NPS will issue guidance to parks on the use of recycled content, recyclable and bio-based oil, coolant, lubricants, and other products for vehicles and equipment.	Achieved in 2014	Achieved in 2014
FT 2.8	**COLLABORATIVE OBJECTIVE:** NPS will replace all two stroke boat and snowmobile engines with four stroke engines.	100% of targeted motors	Achieved in 2016
FT 2.9	**COLLABORATIVE OBJECTIVE:** NPS will reduce total consumption of petroleum fuel products from the 2005 baseline.[36]	15% total reduction in petroleum fuel use	25% total reduction in petroleum fuel use
FT 3: NPS will decrease the GHG emissions from visitor vehicles and promote the use of high-efficiency visitor vehicles.		10% reduction in visitor generated GHG emissions	20% reduction in visitor generated GHG emissions
FT 3.1	**COLLABORATIVE OBJECTIVE:** NPS will establish a baseline estimate of GHG emissions and vehicle miles traveled attributable to visitor vehicles in parks.	Achieved in 2011	Achieved in 2011
FT 3.2	**COLLABORATIVE OBJECTIVE:** NPS will achieve a reduction in GHG emissions from by visitors in private vehicles in parks from the 2010 baseline.	10% reduction in visitor generated GHG emissions	20% reduction in visitor generated GHG emissions
FT 3.3	**COLLABORATIVE OBJECTIVE:** NPS will provide three electric vehicle recharging stations for visitor vehicles in highly visited parks.	Parks receiving 3.5 million annual visitors	Parks receiving 1.5 million annual visitors
FT 3.4	**COLLABORATIVE OBJECTIVE:** NPS will provide three electric vehicle recharging stations for visitor vehicles in parks not accessible by public transportation.	10 parks	20 parks
FT 3.5	**COLLABORATIVE OBJECTIVE:** NPS will provide preferred parking in parks for low GHG-emitting	3% of total visitor	10% of total visitor

FT—Fleet & Transportation Management			
Goal #	Objective	2016 Target	2020 Target
	visitor vehicles.	parking spaces per park unit	parking spaces per park unit
FT 3.6	NPS will seek to establish new visitor transit system partnerships with gateway communities.[37]	5 new partnerships	10 new partnerships
FT 3.7	All General Management Plans that are initiated will consider the viability of promoting sustainability and mitigating GHG emissions through the establishment or expansion of visitor transportation systems.	Achieved in 2011	Achieved in 2011
FT 3.8	NPS will identify funding strategies for visitor transportation systems.	Achieved in 2011	Achieved in 2011
FT 3.9	NPS will develop long range transportation plans at the national, regional, and park levels to enhance coordination with other federal, state, or local entities and to identify and develop alternative transportation opportunities that provide sustainable benefits such as reduced emissions, reduced congestion, and enhanced visitor use experience.	40% of long range transportation plans	90% of long range transportation plans
FT 4: NPS will minimize the impact of in-park employee transportation.		25% reduction in employee generated GHG emissions	35% reduction in employee generated GHG emissions
FT 4.1	**COLLABORATIVE OBJECTIVE:** NPS will establish a baseline estimate of GHG emissions and vehicle miles traveled attributable to in-park employee transportation. This baseline will be integrated into the tools of the Climate Friendly Parks program.	Achieved in 2011	Achieved in 2011
FT 4.2	**COLLABORATIVE OBJECTIVE:** NPS will achieve a reduction in GHG emissions resulting from employee travel within parks from the 2011 baseline estimate.	25% reduction in employee generated GHG emissions	35% reduction in employee generated GHG emissions
FT 4.3	**COLLABORATIVE OBJECTIVE:** NPS will establish employee bicycle sharing programs in parks.	50 parks	90 parks
FT 5: NPS will minimize the impact of park employee commuting.		20% reduction in commuting generated GHG emissions	30% reduction in commuting generated GHG emissions
FT 5.1	**COLLABORATIVE OBJECTIVE:** NPS will establish a baseline estimate of GHG emissions and vehicle miles traveled attributable to employee commuting. This estimating function will be integrated into the tools of the Climate Friendly Parks program.	Achieved in 2011	Achieved in 2011

FT—Fleet & Transportation Management			
Goal #	Objective	2016 Target	2020 Target
FT 5.2	**COLLABORATIVE OBJECTIVE:** NPS will decrease the GHG emissions generated by employee commuting from the 2011 baseline.[38]	20% reduction in commuting generated GHG emissions	30% reduction in commuting generated GHG emissions
FT 5.3	**COLLABORATIVE OBJECTIVE:** NPS will decrease vehicle miles traveled attributable to employee commuting by promoting sustainable commuting practices (i.e. biking or walking).	1% reduction in VMTs	2% reduction in VMTs
FT 5.4	**COLLABORATIVE OBJECTIVE:** NPS will provide covered bicycle storage facilities at all park buildings or logical cluster locations where 5 or more employees are stationed and where those buildings are within 10 miles of a residential community or park housing area.	Achieved in 2014	Achieved in 2014
FT 5.5	NPS will provide showering facilities for park administration and operations facilities and surrounding areas where 10 or more employees are stationed and where the facilities are within 10 miles of a residential community or park housing area.	Achieved in 2014	Achieved in 2014
FT 6: NPS will reduce GHG emissions attributable to official travel.		100% carbon neutral travel	100% carbon neutral travel
FT 6.1	**COLLABORATIVE OBJECTIVE:** NPS will attain carbon neutrality for official travel and prioritize the use of web conferencing or online training to reduce travel.[39]	100% carbon neutral travel	100% carbon neutral travel
FT 6.2	**COLLABORATIVE OBJECTIVE:** NPS will promote the rental of low GHG-emitting vehicles beginning in 2011, and establish partnership programs with rental providers to prioritize the selection of these vehicles for NPS rentals.	Guidance issued by 2014	Guidance issued by 2014

Environmental Purchasing, Materials, Supplies, & Waste Management

This multifaceted goal category is designed to improve the life cycle management of materials across the NPS—from green purchasing and the use of sustainable materials in construction to the diversion of solid waste from landfills. Among the most significant goals in this category is the recommendation that all service contracts will include environmental performance criteria in the selection and evaluation processes.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

PM—Environmental Purchasing, Materials, Supplies, & Waste Management			
Goal #	Objective	2016 Target	2020 Target
PM 1: NPS will purchase environmentally friendly products.		100% of parks complying with NPS guidance	100% of parks complying with NPS guidance
PM 1.1	**COLLABORATIVE OBJECTIVE:** Every park will have at least one person trained once every two years in green procurement and source reduction.	Achieved in 2016	Achieved in 2016
PM 1.2	**COLLABORATIVE OBJECTIVE:** NPS will develop a green procurement plan using a Servicewide template that meets the EPA's Comprehensive Procurement Guidelines and the USDA's biopreferred guidelines.	Achieved in 2010	Achieved in 2010
PM 1.3	NPS will ensure parks comply with the requirements of the Servicewide green procurement plan.	100% of parks	100% of parks
PM 1.4	**COLLABORATIVE OBJECTIVE:** NPS will develop sustainability criteria for the procurement of uniforms.	Achieved in 2014	Achieved in 2014
PM 1.5	**COLLABORATIVE OBJECTIVE:** NPS will develop sustainability criteria for the procurement of NPS official products.	Achieved in 2014	Achieved in 2014
PM 2: NPS will procure environmentally friendly electronics and reduce e-waste.		100% annual compliance with NPS plan	100% annual compliance with NPS plan
PM 2.1	NPS will achieve 100% compliance with the NPS Electronic Stewardship plan.[40]	Achieved in 2010	Achieved in 2010
PM 3: NPS will utilize sustainable materials.		100% of NC or MR meet standards	100% of NC or MR meet standards
PM 3.1	NPS will meet the LEED, Green Globes, or ANSI-accredited standard related to materials and supplies for all new construction and major renovations of existing primary occupied spaces.[41]	100% of NC and MR	100% of NC and MR
PM 3.2	NPS will apply LEED or *Whole Building Design Guide* standards to the procurement of carpet	100% of NC and MR	100% of NC and MR

PM—Environmental Purchasing, Materials, Supplies, & Waste Management			
Goal #	Objective	2016 Target	2020 Target
	systems, paints and coatings, stains, sealants, adhesives, and composite wood and agrifiber products.		
PM 4: NPS will include sustainability requirements in all new contracts.		100% of all appropriate contracts	100% of all appropriate contracts
PM 4.1	**COLLABORATIVE OBJECTIVE:** All new service contracts will include environmental performance criteria in the selection and evaluation processes (including architectural and engineering service contracts governed under the Brooks Act).[42]	Achieved in 2012	Achieved in 2012
PM 4.2	**COLLABORATIVE OBJECTIVE:** NPS will endeavor to make all new contract actions, including task and delivery orders for products and services, as sustainable as possible, consistent with Executive Order 13514 ("at a minimum energy-efficient, water-efficient, bio-based, environmentally preferable, non-ozone depleting, contain recycled content, or are non-toxic or less-toxic alternatives").[43]	Achieved in 2012	Achieved in 2012
PM 5: NPS will report and reduce the presence and generation of toxins in park facilities.		75% of parks reporting toxics	100% of parks reporting toxics
PM 5.1	NPS will quantify, report, and reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed.	75% of parks reporting toxics	100% of parks reporting toxics
PM 6: NPS will divert solid waste from landfills.		55% diversion of solid waste	65% diversion of solid waste
PM 6.1	All parks will develop an Integrated Solid Waste Alternatives Plan (ISWAP) that is updated every five years.	100% of parks, with plans updated every 5 years	100% of parks, with plans updated every 5 years
PM 6.2	All parks will complete the Annual Sustainable Practices Report and include the value of universal waste generated.	Achieved in 2011	Achieved in 2011
PM 6.3	NPS will divert non-hazardous solid waste from landfills (excluding construction and demolition debris).[44]	55% diversion	65% diversion
PM 6.4	NPS will divert solid waste from construction and demolition.[45]	55% diversion	65% diversion
PM 6.5	All construction projects will include a waste management or job site recycling plan.	Achieved by 2012	Achieved by 2012
PM 6.6	NPS will provide drinking water filling stations (capable to fit water bottles) at visitor facilities and will make them accessible both during and after normal operating hours.	75% of visitor facilities	100% of visitor facilities

PM—Environmental Purchasing, Materials, Supplies, & Waste Management			
Goal #	Objective	2016 Target	2020 Target
PM 6.7	**COLLABORATIVE OBJECTIVE:** NPS will require concession operators to sell reusable water bottles and halt the sale to disposable water products in visitor facilities with water filling stations.	75% of appropriate visitor facilities	100% of appropriate visitor facilities

Healthy Indoor Environments

Research in recent decades has revealed the extent to which human health and productivity can be enhanced by improving the quality of indoor environments. On average Americans spend 90 percent of their time indoors, where air pollution is typically much more prevalent and concentrated than in outdoor environments, even in major metropolitan areas. The sources of indoor air pollution include gases from volatile organic compounds (VOCs) present in carpeting systems, paints, stains, sealants, adhesives, and composite wood and agrifiber products. Other sources of indoor air pollution include naturally occurring radon, carbon dioxide build-up in occupied spaces, and dirt and dust tracked into buildings. These pollutants can cause or contribute to illnesses such as asthma, allergies, bronchitis, and more severe respiratory conditions, which in turn decrease worker productivity and contribute to absenteeism. A 1994 case study by the Rocky Mountain Institute concluded that worker productivity was increased by 16 percent through improvements to the indoor environment.

Three goals are presented in this category to improve indoor air quality in NPS work spaces, visitor centers, and park housing. These goals include installation of CO2 and radon monitoring units in visitor centers and workspaces, as well as the integration of automated CO2, radon monitoring, and ventilation systems in all new construction and major renovations involving heating, air conditioning (HVAC) and ventilation systems. A key objective states that by 2016 the NPS will meet industry leading standards related to ventilation for new construction and major renovations of primary occupied spaces.

Human welfare in the home and productivity in the workplace can also be significantly influenced by the availability of daylight, views to the outdoors, personal controls of lighting and thermal systems, reduction of noise, and improvement of potable water quality. This section includes objectives on all of those issues.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

IE—Healthy Indoor Environments			
Goal #	Objective	2016 Target	2020 Target
IE 1: NPS will ensure healthy workspace environments for park employees.		70% of employees report "satisfaction"	90% of employees report "satisfaction"
IE 1.1	**COLLABORATIVE OBJECTIVE:** NPS employees will report "satisfaction" with their workspace environment.	70% of employees	90% of employees[46]
IE 1.2	**COLLABORATIVE OBJECTIVE:** NPS employees will report no serious complaints with their workspace environment.	90% of employees	95% of employees
IE 1.3	**COLLABORATIVE OBJECTIVE:** NPS will establish a baseline of Servicewide lost work days in 2013.	Achieved in 2014	Achieved in 2014
IE 1.4	**COLLABORATIVE OBJECTIVE:** NPS will reduce absenteeism (lost work days) from the 2013 baseline	10% reduction in	15% reduction in

IE—Healthy Indoor Environments			
Goal #	Objective	2016 Target	2020 Target
	by promoting healthy indoor environments.	absenteeism	absenteeism
IE 1.4	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to daylighting for all new construction and major renovation of existing primary occupied spaces.	100% of NC and MR	100% of NC and MR
IE 1.5	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to thermal comfort for all new construction and major renovation of existing primary occupied spaces.	100% of NC and MR	100% of NC and MR
IE 1.6	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to lighting and controls for all new construction and major renovation of existing primary occupied spaces.	100% of NC and MR	100% of NC and MR
IE 1.7	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to views to outdoors for all new construction and major renovation of existing primary occupied spaces (the exemplary LEED standard will apply if not exceeded by Green Globes or the Guiding Principles).	100% of NC and MR	100% of NC and MR
IE 1.8	NPS will develop a guidance document and/or checklist regarding best practices in indoor noise control.	Achieved by 2014	Achieved by 2014
IE 1.9	NPS will meet the indoor noise control best practices and standards related to HVAC, classrooms, housing, and working environments.[47]	100% of NC and MR	100% of NC and MR
IE 1.10	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to ventilation for all new construction and major renovation of existing primary occupied spaces.	100% of NC and MR	100% of NC and MR
IE 2: NPS will promote employee well being by maximizing indoor air quality.		100% of workspaces with 5 or more FTEs monitored	100% of workspaces with 5 or more FTEs monitored
IE 2.1	NPS will provide CO2 and radon monitoring units for all visitor centers and workspaces occupied by five or more FTE and 100% of all interior spaces where the presence of radon is suspected.	Achieved in 2014	Achieved in 2014
IE 2.2	All new construction and major renovations involving HVAC and ventilation systems will include integrated/automated CO2 and radon monitoring and ventilation control systems.	100% of NC and MR	100% of NC and MR
IE 3: NPS will promote employee well being by maximizing indoor water quality.		100% point source potable water meets regulations	100% point source potable water meets regulations
IE 3.1	NPS will conduct five-year cyclical testing of drinking water in buildings constructed prior to 1988.[48]	100% of targeted facilities audited every 5 years	100% of targeted facilities audited every 5 years

IE—Healthy Indoor Environments			
Goal #	Objective	2016 Target	2020 Target
IE 3.2	NPS will conduct indoor water quality assessments for 50% of NPS buildings that provide drinking water.	100% of buildings providing drinking water	100% of buildings providing drinking water
IE 3.3	NPS will ensure that potable water in all NPS facilities meets the EPA's National Primary Drinking Water Regulations at the source.	100% of point source potable water	100% of point source potable water

Outdoor Environmental Quality & Sustainable Sites

This category includes goals that will reduce the environmental impacts of NPS facilities on outdoor environments. Values that will be advanced through the implementation of these goals include the preservation of night skies and natural sounds, water quality, wildlife habitat, and natural and cultural viewsheds.

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

OE—Outdoor Environmental Quality & Sustainable Sites			
Goal #	Objective	2016 Target	2020 Target
OE 1: NPS will reduce light pollution from park facilities with the goal of night sky preservation.		70 Night Sky friendly lighting projects completed	100 Night Sky friendly lighting projects completed
OE 1.1	NPS will develop outdoor lighting guidelines that supplement LEED and other energy standards that meet Night Sky best practices.	Achieved in 2014	Achieved in 2014
OE 1.2	NPS will identify a process to address existing building safety code requirements in order to install Night Sky friendly lighting systems.	Achieved in 2014	Achieved in 2014
OE 1.3	New construction, major renovations, and lighting projects shall adhere to the Night Sky guidelines.	100% of NC, MR, and lighting projects	100% of NC, MR, and lighting projects
OE 1.4	NPS will complete outdoor lighting demonstration projects that exemplify good natural lightscape protection and high-energy performance.	50 projects	75 projects
OE 1.5	NPS will inventory and assess all outdoor lighting equipment in 50% of parks.	80% of outdoor lighting equipment	100% of outdoor lighting equipment
OE 1.6	NPS will complete comprehensive outdoor lighting retrofits in parks for the purpose of night sky preservation, with a minimum of five parks in each region.	40 parks	60 parks
OE 1.7	**COLLABORATIVE OBJECTIVE:** NPS will establish night sky viewing, interpretation, and education areas in parks.	50% of parks	75% of parks
OE 2: NPS will minimize sound pollution in the outdoor environment.		100% of parks meet specific standard for sound pollution	100% of parks meet specific standard for sound pollution
OE 2.1	NPS will develop and maintain a list of recommended low noise tools, maintenance, and	Achieved in 2014	Achieved in 2014

OE—Outdoor Environmental Quality & Sustainable Sites			
Goal #	Objective	2016 Target	2020 Target
	construction equipment.		
OE 2.2	NPS will prioritize the procurement and installation of low noise and low GHG-emitting equipment whenever possible.	100% of relevant equipment	100% of relevant equipment
OE 2.3	**COLLABORATIVE OBJECTIVE:** NPS will develop appropriate park-specific indicators and standards as required to reduce impacts from noise sources.	Achieved in 2015	Achieved in 2015
OE 3: NPS will minimize heat island effects.		25 high performance roofs installed and interpreted	50 high performance roofs installed and interpreted
OE 3.1	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to roof and non-roof material albedo standards for all new construction, major renovation, and roof replacements.[49]	100% of NC, MR, and new roofs	100% of NC, MR, and new roofs
OE 3.2	**COLLABORATIVE OBJECTIVE:** NPS will interpret the sustainability benefits of high-performance roofs that are viewable to visitors.	25 roofs	50 roofs
OE 3.3	NPS will meet the LEED, Green Globes, or ANSI-accredited standard related to parking lots and walkways for new construction, major renovation, and new parking and walkway facilities.	100% of NC, MR, and new parking & walkways	100% of NC, MR, and new parking & walkways
OE 4: NPS will promote sustainability in facility site selection and preservation.		100% of NC and MR incorporates guidelines	100% of NC and MR incorporates guidelines
OE 4.1	NPS will meet the LEED, Green Globes, or ANSI-accredited standards related to redeveloping brownfields, protecting or restoring habitat, and/or maximizing open space in site selection and preservation for all new construction and major renovations.	100% of NC and MR	100% of NC and MR
OE 4.2	NPS will provide standards for site selection and preservation in the planning and design of facilities and infrastructure.[50]	Achieved in 2014	Achieved in 2014
OE 4.3	**COLLABORATIVE OBJECTIVE:** NPS will adopt a policy that guides parks to protect and/or restore natural and cultural viewsheds as a preeminent value.	Achieved in 2014	Achieved in 2014
OE 4.4	NPS will provide standards for protecting and/or enhancing viewsheds in the planning and design of facilities and infrastructure.	Achieved in 2014	Achieved in 2014
OE 4.5	NPS will establish policies for the location of utility infrastructure in parks in order to mitigate impacts on natural and cultural resources.	Achieved in 2014	Achieved in 2014

OE—Outdoor Environmental Quality & Sustainable Sites			
Goal #	Objective	2016 Target	2020 Target
OE 5: NPS will minimize the impact of paved surfaces on park resources.		100% of projects incorporate appropriate sustainability measures	100% of projects incorporate appropriate sustainability measures
OE 5.1	NPS, in partnership with the Federal Highways Administration (FHWA), will develop best practice recommendations for paved surfaces to minimize stormwater runoff, prevent pollution, and minimize road-tire noise.	Achieved in 2015	Achieved in 2015
OE 5.2	NPS, in partnership with FHWA, will consider the application of sustainability best practices to all road projects, and where deemed appropriate by the design team, will incorporate these practices into projects.	100% of appropriate paved construction	100% of appropriate paved construction
OE 5.3	NPS, in partnership with the Federal Lands Highways Program (FLHP), will maintain a viable revegetation process for road projects. The NPS will develop like processes for other paved surfaces (e.g. trails) that experience disturbances from construction activities.	100% of appropriate paved construction	100% of appropriate paved construction
OE 5.4	NPS, in partnership with FHWA, will endeavor to use an average of 15% or greater recycled material (asphalt) annually in the execution of FLHP projects.	15% recycled content used annually	15% recycled content used annually
OE 5.5	NPS, in partnership with FHWA, will minimize paved surfaces in national parks by conducting assessments of existing parking, pull-off or service areas, and working with parks to remove underutilized or unnecessary paved surfaces and restore those areas to more natural conditions.	Assess 100% of appropriate paved surfaces	Remove or restore 50% of identified sites
OE 5.6	NPS will conduct assessments of all parking and drainage systems to identify at-risk areas in need of enhanced pollution prevention strategies, provide recommendations to the responsible program managers, and implement recommendations.	Assess 100% of appropriate paved surfaces	Implement recommendations at 50% of identified sites
OE 5.7	NPS will install appropriate pollution prevention improvements at identified at-risk areas with the following conditions: • The improvements will be first considered/recommended by a professional design team; • The improvements will be funded by the appropriate program as determined by NPS management.	100% of appropriate at-risk facilities	100% of appropriate at-risk facilities
OE 5.8	**COLLABORATIVE OBJECTIVE:** NPS will create a “Roads to Trails” program that will convert aging roads into trails for pedestrian and bike use.	Achieved by 2015	Achieved by 2015

Best Practices in Sustainable Facility Management

This category captures broad goals and objectives that that do address as specific type of environmental impairment and therefore do not fit logically into one of the other seven goal categories. Important goals in this category include the use of environmental management systems (EMSs) across the NPS, the engagement of youth in sustainability efforts through volunteer and employment opportunities, and the application of best practices throughout the implementation of the *Green Parks Plan.*

Note: Objectives with a highlighted footnote are driven by federal sustainability mandates.

BP—Best Practices in Sustainable Facilities Management			
Goal #	Objective	2016 Target	2020 Target
BP 1: NPS will implement an EMS across the NPS.		100% of appropriate facilities implement EMS	100% of appropriate facilities implement EMS
BP 1.1	NPS will establish a framework of EMSs that enables all parks, regional offices, programs, and other units to participate in an EMS to the greatest extent appropriate.[51]	Achieved in 2011	Achieved in 2011
BP 2: NPS will educate and engage youth on issues related to sustainability and parks, and provide volunteer and employment opportunities to youth in efforts that enhance sustainability in parks.		3,000 youth engaged annually	3,000 youth engaged annually
BP 2.1	**COLLABORATIVE OBJECTIVE:** NPS will involve youth in sustainability projects in parks and support the development of a new CCC—the Youth Climate Change Corps.	1,000 youth engaged annually	1,000 youth engaged annually
BP 2.2	**COLLABORATIVE OBJECTIVE**: NPS will educate and train youth on the impacts of climate change and sustainability practices.	2,000 youth engaged annually	2,000 youth engaged annually
BP 3: NPS will apply key principles during the implementation of the *Green Parks Plan* and describe these activities in *Green Park* certification applications.		100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.1	NPS will prioritize the reduction of GHG emissions in the implementation of the strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles

BP—Best Practices in Sustainable Facilities Management			
Goal #	Objective	2016 Target	2020 Target
BP 3.2	NPS will prioritize sustainability projects that include opportunities to interpret the impact of climate change on parks and other challenges in sustainable management, as well as educate visitors about practical steps they can take to promote sustainability, including through the Do Your Part for Climate Friendly Parks Program.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.3	NPS will seek to showcase technological innovation in achieving the sustainability strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.4	NPS will seek to leverage partnerships to maximize the impact of its actions in achieving the sustainability strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.5	NPS will account for life cycle costs at an appropriate level and scale, and incorporate sustainability as a factor in value-based analysis in achieving the sustainability strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.6	NPS will utilize data to the greatest extent possible for improved decision making, and promote the use of Global Information Systems (GIS) mapping in achieving the sustainability strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.7	NPS will make the implementation actions scalable and adaptable to park units of different sizes and types in achieving the sustainability strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.8	NPS will develop and implement actions consistent with the resource protection requirements of historic assets (e.g., archeological sites or cultural landscapes) in achieving the sustainability strategic goals.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles
BP 3.9	NPS will establish incentive structures to encourage innovation, entrepreneurship, and leadership at the park level in the implementation of the *Green Parks Plan*.	100% of parks reporting actions taken to advance principles	100% of parks reporting actions taken to advance principles

[4] Section 2, Sub-section (c) of Executive Order (E.O.) 13514 titled *Federal Leadership in Environmental, Energy, and Economic Performance* requires all agencies to develop a comprehensive inventory of absolute greenhouse gas emissions, including scope 1, scope 2, and specified scope 3 emissions, within 15 months of October 5, 2009, for fiscal year 2010, and thereafter, annually at the end of January, for the preceding fiscal year. The Executive Order defines scope 1 as direct greenhouse gas emissions from sources that are owned or controlled by a federal agency; scope 2 as direct greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a federal agency; and scope 3 as greenhouse gas emissions from sources not owned or directly controlled by a federal agency but related to the agency's activities, such as vendor supply chains, delivery services, and employee travel and commuting. Emissions resulting from visitor vehicles in parks are not included in the NPS emissions.

[5] See number 4 above.

[6] "Long-range planning documents" include park General Management Plans, rivers and trails plans, and wilderness plans.

[7] Section 2, Sub-sections (a) and (b) of E.O. 13514 requires all agencies to develop an annual reduction target for scope 1, 2, and 3 emissions with an ultimate goal year of 2020. For the purpose of this goal, scope 3 emissions will not include emissions resulting from visitor activity. However, the NPS is expected to establish goals for the reduction of GHG emissions from visitor activities. The FMP will defer to a Servicewide committee for the development of strategic goals that are outside the realm of facility management.

[8] The use of carbon offsets will require consultation with the Director.

[9] Section 2, Sub-section (g) of E.O. 13514 requires all new construction, major renovation, or repair and alteration of Federal buildings complies with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings which is the basis of all recommendations made in the NPS SBIP.

[10] See number 9 above.

[11] See number 6 above.

[12] The Energy Independence & Security Act of 2007 (EISA 2007) requires 2003 to be the baseline year used in calculation energy reductions.

[13] EISA 2007 requires a reduction of 30 percent by 2015.

[14] E.O. 13423 requires all leases entered into meet the energy (and broader) requirements listed in the Executive Order. EISA 2007 requires that beginning in 2011, no federal agency shall enter into a contract to lease space in a building that has not earned the Energy Star label but provides exceptions to the rule.

[15] EISA 2007 requires that any large capital energy investment in an existing building that is not a major renovation but involves replacement of installed equipment, or involves renovation, rehabilitation, expansion, or remodeling of existing space employs the most energy efficient design, systems, equipment, and controls be life cycle cost effective beginning 2012.

[16] The NPS is mandated to report utility data by the National Energy Conservation Policy Act, EPACT 2005, EISA 2007, and E.O. 13423 *Strengthening Federal Environmental, Energy, and Transportation Management*. The NPS data is aggregated at the DOI level and provided to DOE in order to report to Congress on the government's performance in meeting sustainability targets.

[17] EISA 2007 requires the NPS to conduct energy and water evaluations in 25 percent of designated covered facilities annually with every facility evaluated once every four years. The evaluation should identify energy efficiency measures through recommissioning and retrocommissioning. "Covered facilities" are defined as the top energy-consuming parks that in aggregate account for 75 percent of the total NPS annual energy consumption.

[18] This target is formed from the combined requirements of the Energy Policy Act of 2005 (EPACT 2005), E.O. 13423, and EISA 2007. This target is consistent with the new construction requirements of NPS Staff Directive 78-10 titled "Metering of Water and Energy Use – New Construction," which requires that energy and water meters be installed on all new construction.

[19] Section 103 of EPACT 2005 requires all federal buildings to be metered by October 1, 2012.

[20] This target matches the requirements of the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* (Guiding Principles) and the DOI's and the NPS's Sustainable Buildings Implementation Plans. Building design shall be compared to an ASHRAE 90.1 compliant building of the same size and in the same location for the following loads: space heating, space cooling, ventilation, service water heating, lighting, and all other energy-consuming systems normally specified as part of the building design except for receptacle and process loads.

[21] See number 20 above.

[22] EISA 2007 requires new buildings and major renovations to be built to reduce fossil fuel consumption by 55 percent beginning in 2010 so that these buildings meet a 100 percent reduction by 2030.

[23] EPACT 2005 requires the NPS to use renewable energy on a tiered scale or 3 percent between FY2007 and FY2009, 5 percent between FY2010 and FY2012, and 7.5 percent for FY2013 and beyond.

[24] E.O. 13423 requires 50 percent of renewable energy consumed from new sources (after January 1, 1999).

[25] Section 2, Sub-section (d) of E.O. 13514 requires all agencies to baseline potable water use using 2007 data and baseline industrial, landscaping, and agricultural water use using 2010 data.

[26] Section 2, Sub-section (d) of E.O. 13514 requires a 2 percent annual potable water reduction from 2007 baseline for a total reduction of 26 percent by 2020.

[27] Section 2, Sub-section (d) of E.O. 13514 requires all agencies to baseline potable water use using 2007 data and baseline industrial, landscaping, and agricultural water use using 2010 data.

[28] Section 2, Sub-section (d) of E.O. 13514 requires a 2 percent annual industrial, landscaping, and agricultural water reduction from 2010 baseline for a total reduction of 20 percent by 2020.

[29] See number 16 above.

[30] See number 17 above.

[31] See number 18 above.

[32] The Guiding Principles call for the use of harvested rainwater, treated wastewater, and air conditioner condensate should be used for non-potable use and potable use, where allowed.

[33] Section 14 of E.O. 13514 requires the Environmental Protection Agency to issue guidance on the implementation of section 438 of the EPACT 2007 that relates to the management of stormwater. The NPS will update its stormwater goals to reflect the guidance.

[34] Section 2, Sub-section (a) of E.O. 13514 calls on agencies to consider optimizing the size of their fleets in order to reduce fuel consumption and the generation of GHGs.

[35] EISA 2007 prohibits agencies from acquiring any light-duty motor vehicle or medium-duty passenger vehicle that is not a low GHG emitting vehicle.

[36] Section 2, Sub-section (a) of E.O. 13514 requires agencies to reduce total consumption of petroleum products by a minimum of 2 percent annually through the end of fiscal year 2020, relative to a baseline of fiscal year 2005.

[37] Section 2, Sub-section (f) of E.O. 13514 requires agencies to advance regional and local integrated planning by participating in regional transportation planning and recognizing existing community transportation infrastructure.

[38] Section 2, Sub-section (b) of E.O. 13514 calls on agencies to implement strategies and accommodations for transit, travel, training, and conferencing that actively support lower-carbon commuting and travel by agency staff.

[39] See number 38 above.

[40] Section 2, Sub-section (i) of E.O. 13514 requires agencies to promote electronics stewardship through the procurement of EPEAT and Energy Star compliant electronics, implementing best practices for energy and paper use in electronics and disposing of used systems in an environmentally friendly manner. The DOI has issued the Electronic Stewardship Implementation Plan (http://www.doi.gov/greening/electronics/Final percent20ESIP.pdf) and the NPS has drafted its own implementation plan in response to the DOI plan.

[41] Section 2, Sub-section (g) of E.O. 13514 requires all new construction, major renovation, or repair and alteration of Federal buildings complies with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* which includes requirements to used recycled content, bio-based, and non-ozone depleting building materials.

[42] Section 2, Sub-section (b) of E.O. 13514 calls on agencies to pursue opportunities with vendors and contractors to address and incorporate incentives to reduce GHG emissions.

[43] Section 2, Sub-section (h) of E.O. 13514 requires agencies to ensure 95 percent 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 (e.g., Electronic Product Environmental Assessment Tool [EPEA]) certified), non-ozone depleting, contain recycled content, or are non-toxic or less-toxic alternatives, where such products and services meet agency performance requirements.

[44] Section 2, Sub-section (e) of E.O. 13514 requires agencies to divert at least 50 percent of non-hazardous solid waste by the end of FY2015.

[45] Section 2, Sub-section (e) of E.O. 13514 requires agencies to divert at least 50 percent of construction and demolition materials and debris by the end of FY2015.

[46] This target builds upon a standard in the LEED New Construction platform that requires building managers to demonstrate that at least 80% of building occupants are "satisfied" with their personal thermal comfort.

[47] Indoor spaces with HVAC will meet the design guidelines established in the Sound and Vibration Control chapter of the *ASHRAE Handbook—HVAC Applications*. Classrooms and other critical learning spaces will meet the acoustical performance criteria in ANSI S12.60. For multifamily residences, wall and floor assemblies will meet the sound insulation criteria outlined in the U.S. Dept. of Housing and Urban Development's Guide to Airborne, Impact, and Structureborne Noise Control in Multifamily Dwellings. Finally, all working environments will be designed to facilitate compliance with the occupational noise exposure requirements of 29CFR1910.95.

[48] The Safe Drinking Water Act, Subpart E, Section 141.43 requires for states to enforce the ban on lead pipe, solder, and flux for construction beginning in 1988 (http://www.epa.gov/safewater/lcrmr/pdfs/guidance_lcmr_state_implementation_reporting_appendix_a.pdf).

[49] Section 2, Sub-section (g) of E.O. 13514 calls on agencies to pursue cost-effective, innovative strategies, such as highly reflective and vegetated roofs.

[50] Section 10, Sub-section (a) requires the Department of Transportation and other agencies to provide recommendations for sustainable location strategies related to site selection to Council of Environmental Quality (CEQ). The NPS standards will conform to the guidance provided from the CEQ.

[51] Section 2, Sub-section (j) of E.O. 13514 calls on agencies to continue implementing formal environmental management systems at all appropriate organizational levels.

Appendix

Definitions of Key Terms

American National Standards Institute (ANSI) accredited

Standard administered by a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States. The DOI and NPS Sustainable Buildings Implementation Plans require targeted buildings to be certified using an ANSI-accredited certification program.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1

Energy code imposing power density limits on buildings. The intent of the standard is to promote energy efficiency by lowering the amount of power consumed by buildings. This standard is included in the Guiding Principles for *Federal Leadership in High Performance and Sustainable Buildings*.

At-risk facilities

Facilities negatively affected by climate change-induced physical changes in the environment. For example, facilities located near coastal areas could be threatened by elevated sea levels, and facilities located in floodplains could be adversely impacted by increased stormwater runoff.

British Thermal Unit (BTU)

Unit of thermal (heat) energy used to measure energy consumption. One BTU is the energy needed to heat one pound of water by one degree Fahrenheit at a constant pressure of one atmosphere. The NPS converts all utility-provided energy consumption measures into BTUs for annual reporting in order to compare total energy use accurately across utility types.

Brownfield

Abandoned industrial or commercial site, typically contaminated with low concentrations of pollutants and hazardous waste, which can be reused post-remediation. Redevelopment of these sites is often complex and expensive.

Carbon Neutrality

State of zero net greenhouse gas (GHG) emissions that is achieved by balancing the amount of GHG emissions released with contributions to carbon sequestration projects or the purchase of renewable energy credits.

Climate Action Plan

Park-based plan for mitigating greenhouse gas (GHG) emissions and creating educational opportunities for park visitors on the causes of climate change and its impacts to parks, as well as practical steps for reducing GHG emissions. The plan is prepared by members of the NPS Climate Friendly Parks.

Climate Friendly Parks

An NPS program that provides parks with management tools and resources to assess and reduce parks' contributions to climate change, adapt to its impacts, and educate visitors about how to tackle the climate change-related issues. To become an official member of this program, parks are required to complete an application, inventory greenhouse gas emissions using the Climate Leadership in Parks (CLIP) Tool, and develop a Climate Action Plan.

Climate Leadership in Parks (CLIP) Tool

Tool developed by the Climate Friendly Parks program to help parks inventory greenhouse gas (GHG) emissions. The tool converts data on energy consumption, waste production, and other activities within the park that produce GHG emissions to generate a comprehensive GHG emissions estimate.

Comprehensive Procurement Guidelines

Recommendations provided by the Environmental Protection Agency (EPA) to promote the use of materials recovered from solid waste. The EPA is required to designate products that are or can be made with recovered materials, as well as recommend practices for buying these products.

Covered Facilities

The top energy-consuming parks, as identified by the Energy Independence and Security Act of 2007, which collectively account for 75 percent of total annual NPS energy consumption. The Department of Energy requires the NPS to identify covered facilities as part of its annual energy reporting process.

Current Replacement Value (CRV)

Industry-standard cost and engineering estimate of materials, supplies, and labor required to replace a facility or component according to its existing size and functional capability.

Energy Star

Designation awarded to buildings systems, industrial equipment, and consumer products that meet certain energy efficiency standards established by the program. Energy Star is a joint venture between the Department of Energy and the Environmental Protection Agency.

Environmental Management System (EMS)

Set of processes designed to help businesses reduce their negative impact on the environment, while improving operating efficiency.

Federal Lands Highway Program (FLHP)

Part of the Federal Highway Administration's cooperative agreement with the NPS. The FLHP provides funding for transportation facilities and infrastructure required for directly accessing U.S. national parks. This program includes preparing plans, letting contracts for bids, and supervising construction projects.

Federal Highway Administration (FHWA)

One of the major agencies of the Department of Transportation, the FHWA ensures that roads and highways are safe and designed according to the latest technical advancements. The FHWA oversees the Federal Lands Highway Program.

Facility Management Program (FMP) (Park Facility Management Division [PFMD])

Division responsible for providing Servicewide leadership, policy development, and accountability for NPS programs associated with stewardship, maintenance, operations, accessibility, and sustainability of facilities in national parks.

Facility Management Software System (FMSS)

Official information system for the NPS park facility portfolio. This system helps the NPS to implement the capital asset management principles included in congressional directives, presidential executive orders, Office of Management and Budget (OMB) guidance, and DOI guidance.

Flux

Soldering paste used for connecting pipe.

Greenhouse Gas Emissions (GHGs)

Gases in the atmosphere (e.g., water vapor, carbon dioxide, methane, nitrous oxide, and ozone) whose presence in the atmosphere contributes to the greenhouse effect. Greenhouse gases can be created by various means, including the burning of fossil fuels (e.g., gasoline, coal). Greenhouse gases can be classified as Scope 1, 2, or 3, defined as follows by Executive Order 13514:

- *Scope 1* – Direct GHG emissions from sources that are owned or controlled by a federal agency (e.g., NPS vehicles or diesel generators)
- *Scope 2* – Direct GHG emissions resulting from the generation of electricity, heat, or steam purchased by a federal agency
- *Scope 3* – Emissions from sources not owned or directly controlled by a federal agency but related to the agency's activities, such as vendor supply chains, delivery services, and employee travel and commuting.

Green Globes

"Green" management tool that contains an assessment protocol, rating system, and guide for integrating environmentally friendly design into commercial buildings.

Green Teams

Groups of designated regional and park staff members responsible for implementation of the Green Parks Plan. These groups serve as part of the preestablished EMS teams and consist of facility managers, environmental managers, and other relevant sustainability staff.

Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)

Principles issued from a memorandum of understanding (MOU) signed by dozens of federal agencies calling each to be leaders in the design, construction, and operation of high-performance and sustainable buildings. Five principles are identified in the MOU, including Employ Integrated Design Principles, Optimize Energy Performance, Protect and Conserve Water, Enhance Indoor Environmental Quality, and Reduce Environmental Impact of Materials.

Infiltration Rate

Rate at which the soil absorbs stormwater.

Integrated Solid Waste Action Plan (ISWAP)

Tool used by parks to better quantify, reduce, and manage the waste stream from NPS operations.

Large Capital Energy Investment

Investments made in substantial, but not major, building renovations, as defined by the Energy and Independence Act of 2007. These investments include the replacement of installed equipment (e.g., heating and cooling systems) or the renovation, rehabilitation, expansion, or remodeling of existing space.

LEED (Leadership in Energy & Environmental Design)

Third-party certification program that serves as a nationally accepted benchmark for the design, construction, and operation of high-performance green buildings. It encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

Life Cycle Costs

Costs associated with the full life cycle of a facility or component. For example, life cycle costs for a building include those associated with the design, construction, operations, maintenance, and demolition of a facility.

Light-Duty Passenger Vehicle

Vehicle weighing up to 8,000 pounds.

Low Greenhouse Gas Emitting Vehicle

Vehicle that emits a reduced amount of carbon dioxide and other greenhouse gases. These types of vehicles promote a more sustainable environment and constitute an important element of Climate Friendly Parks.

Major Renovation

Construction projects with a total project cost greater than or equal to 50 percent of the current replacement value of the facility being renovated.

Medium-Duty Passenger Vehicle

Vehicle weighing 8,500 to 10,000 pounds that consists primarily of large sport utility vehicles and passenger vans.

Night Skies

NPS program that is part of the NPS Natural Resources program. The Night Skies program works to protect night sky quality from light pollution created by non-natural sources.

Non-Hazardous Solid Waste

Waste that does not fall under the category of hazardous waste, biomedical waste, or radioactive waste (e.g., construction, construction debris, and refuse).

Park Facility Management Division (PFMD)

See Facility Management Program (FMP).

Potable Water

Water that is safe to consume (i.e., free from pollutants, harmful organisms, and impurities).

Recommissioning

Process of improving the operations and maintenance of existing building systems while using only the minimum amount of energy required to meet the owner's operational needs. When standardized maintenance and energy management procedures fail to fix chronic building problems, recommissioning provides a systematic approach for discovering and solving them. The process capitalizes on heating, cooling, and electrical load reductions by continually monitoring energy consumption to optimize energy performance and savings.

Resource Conservation Recovery Act (RCRA)

Act that governs the disposal of solid and hazardous waste.

Retrocommissioning

Systematic process for identifying low-cost operational and maintenance improvements in existing buildings, as well as for updating these buildings according to original design intentions. Retrocommissioning emphasizes the use of energy-efficient equipment (e.g., mechanical equipment, lighting, and related controls), rather than relying on major equipment replacement, to optimize existing system performance. Retrocommissioning typically results in improved indoor air quality, comfort, controls, energy, and resource efficiency.

Senior Sustainability Officer

NPS officer responsible for implementing sustainability requirements, including baselining greenhouse gas emissions, identifying mitigation targets, preparing a Servicewide sustainability strategic plan, and monitoring NPS's performance in meeting requirements.

Stormwater

Water that results from a precipitation event. Stormwater can either be soaked into the ground or flows into surface waterways or storm sewers. The two main problems related to stormwater are the excess that comes with an incident, such as a flood, and the potential contaminants that the water is carrying.

Sustainability

Continued pursuit of existing goals and activities that does not create a negative or unmanageable impact on the environment. Sustainability aims to satisfy existing human needs without limiting resources for future generations.

Sustainable Buildings Implementation Plan (SBIP)

NPS strategy for integrating the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings into the management of park facilities. The plan was developed in response to the the Department of the Interior's SBIP, which required each bureau to develop an individual plan. The NPS SBIP establishes square foot and cost thresholds that require the integration of the Guiding Principles into new construction and major renovations.

Sustainable Energy

Energy provision that successfully meets current needs without sacrificing future needs. Use of renewable energy is one of the best means of achieving sustainable energy.

Value-Based Analysis

Analysis that uses sustainability, along with other factors, to determine sustainability strategic goals.

Vehicle Miles Traveled (VMTs)

Total distance traveled by NPS employees or visitors in NPS or privately owned vehicles while conducting park business or private park visits.