



# Green Parks Plan

Advancing Our Mission through  
Sustainable Operations





Bottle Filling Station, Zion National Park, NPS Photo

## By the Numbers\*

**2.6 billion**

Gallons of water consumed in national parks every year

**48**

National Park Service buildings certified under the Leadership in Environmental and Energy Design (LEED®) Green Building Rating System

**72**

Parks that account for 75 percent of the National Park Service's total annual energy consumption

**15,000**

U.S. households that, on average, consume as much energy annually (1.4 million MMBTU) as the entire National Park Service

**\$44 million**

Average annual energy costs for the National Park Service

**280 million**

Annual visits to national parks and opportunities to demonstrate sustainable operations

Cover photo captions: Photovoltaic system installation, Lake Roosevelt National Recreation Area, NPS Photo (top right). Visitors using shuttle system, Zion National Park, NPS Photo (top left). Ranger with students, Golden Gate National Recreation Area, NPS Photo (bottom).

\* Based on 2010–2011 data.



## Director's Message

### Our Commitment to Sustainability and Environmental Performance

*A Call to Action* lays out how the National Park Service will prepare for our second century of stewardship and engagement. One of the commitments we made is to “Go Green” and reduce our greenhouse gas emissions. This *Green Parks Plan* outlines how we are going to live up to that commitment, reduce our impact on the environment, mitigate the effects of climate change, and integrate sustainable practices into every aspect of our operations.

The *Green Parks Plan* articulates an overarching vision that will make everything we do more sustainable, from reducing energy and water consumption, to limiting the waste that we generate, to changing what we buy, to altering how we manage facilities.

To succeed, we must also think and act on a scale that extends beyond park boundaries. We must collaborate with and learn from our partners, concessioners, and surrounding communities. We must explain our approach to sustainability in ways that engage the millions of Americans who visit their national parks every year and invite them to do their part in the park and at home. And we must share our successes to foster environmental stewardship far beyond our borders.

To those of you who have already embraced sustainable practices, thank you for leading the way. Now it is time for all of us to lead, collaborate, innovate, and live our shared commitment to the environment – and to share this commitment with the communities and visitors we serve. With your help, the National Park Service will continue to be a world leader in environmental stewardship and sustainability.

## Vision

*The NPS will preserve park resources unimpaired for the enjoyment of current and future generations by reducing its environmental impact through sustainable operations, design, decisions, and management at every level of the organization.*

## Introduction

Since its inception in 1916, the National Park Service (NPS) has been a world leader in protecting natural and cultural resources. The NPS has preserved many of the country's greatest treasures and in the process has been a model of resource management. The NPS must extend that leadership to the sustainable management of its facilities and operations to fully carry out the mission of environmental stewardship.

The NPS manages the largest number of constructed assets of any civilian agency in the Federal Government. It operates and maintains more than 67,000 structures spread across 397 national parks that account for more than 50 million square feet of constructed space (such as visitor centers and historic structures), more than 4 million acres of maintained landscapes (such as campgrounds and battlefields), 17,000 miles of trails, and more than 3,000 utility systems. The NPS is designing new facilities and renovating existing buildings to operate in a much more sustainable manner and working to reduce the overall environmental impacts of its operations.

The *Green Parks Plan (GPP)* defines a collective vision and a long-term strategic plan for sustainable management of NPS operations. A critical component of the implementation of the *GPP* will be informing and engaging park staff, visitors, and community partners about climate change and sustainability to broaden opportunities to foster change.

### Background and Scope

In September 2010, the NPS released its *Climate Change Response Strategy*, which outlined its planned approach to addressing the effects of climate change on national parks. The strategy is supported by four pillars: science, communication, adaptation, and greenhouse gas (GHG) mitigation. The *GPP* establishes ambitious goals to improve performance in sustainability Servicewide and reduce GHG emissions.



Rio Grande River, Big Bend National Park, NPS Photo

The plan focuses on the impact of park facilities on the environment and human welfare and encourages NPS employees to adopt sustainability in their daily activities. While many parks and programs have already made great strides to improve the sustainability of their operations, the *GPP* asks all offices, programs, and parks to commit to those goals and objectives where they can most meaningfully contribute. For facilities not directly maintained or operated by the NPS, such as concessioner-owned and leased buildings, staff will work with partners to implement *GPP* goals and incorporate them into new concession contracts and leases whenever possible. Environmental Management Systems (EMS) will serve as a valuable implementation tool through the “Plan-Do-Check-Act” process to drive progress in meeting sustainability objectives prioritized at each level of the Service.



### Incentivizing Change

The success of the *GPP* will depend on committed staff and the ability of the NPS to advance a culture that promotes sustainability and encourages innovation at all levels. Employees must be empowered to drive improvement and change in all of their activities. The NPS must adopt sustainability as a guiding value of the Service, integrate it into decision making, support ideas from Green Teams and individuals, foster leadership, improve communication and collaboration, and expand training on sustainability principles. The NPS must build employee engagement, expand recognition programs for achievements, and view all operations and decisions through a lens of sustainability.

Robust communications among employees, partners, communities, and park visitors will greatly expand the impact of NPS sustainability actions. Communication efforts in support of the *GPP* will include sharing information about sustainability successes, learning from others about best practices, developing sustainability messages in interpretation and education programs, and raising awareness of the importance of sustainability to the nation and the world.

## Green Parks Plan Goals

The *GPP* is based on nine strategic goals that focus on the impact of facilities on the environment and human welfare.

Each goal is supported by performance objectives. On the next nine specific goal pages, those driven by Federal mandates are signified by a ; those that exceed required levels are identified with a ; those with neither symbol are NPS-specific targets to advance the sustainability of park operations.



### **Continuously Improve Environmental Performance:**

The NPS will meet and exceed the requirements of all applicable environmental laws.



### **Be Climate Friendly and Climate Ready:**

The NPS will reduce GHG emissions and adapt facilities at risk from climate change.



### **Be Energy Smart:**

The NPS will improve facility energy performance and increase reliance on renewable energy.



### **Be Water Wise:**

The NPS will improve facility water use efficiency.



### **Green Our Rides:**

The NPS will transform our fleet and adopt greener transportation methods.



### **Buy Green and Reduce, Reuse, and Recycle:**

The NPS will purchase environmentally friendly products and increase waste diversion and recycling.



### **Preserve Outdoor Values:**

The NPS will minimize the impact of facility operations on the external environment.



### **Adopt Best Practices:**

The NPS will adopt sustainable best practices in all facility operations.



### **Foster Sustainability Beyond Our Boundaries:**

The NPS will engage visitors about sustainability and invite their participation.



Park Workshop, Zion National Park, NPS Photo



## Continuously Improve Environmental Performance

The NPS will meet and exceed the requirements of all applicable environmental laws.

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“A thing is right when it tends to preserve the integrity, the stability, and beauty of the biotic community. It is wrong when it tends otherwise.”

—Aldo Leopold 1887–1948

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The strong foundation of a proactive and forward-thinking sustainability program is adherence to all Federal environmental mandates, including laws, Executive Orders, regulations, and Departmental and NPS policy. Meeting these mandates requires deliberate, planned activity. Environmental Management Systems (EMS) provide the structure and processes needed to ensure that: environmental mandates are understood; procedures, training, and other tools are in place to ensure that each mandate can be met; and performance is tracked. A key part of an EMS approach is to assess performance via environmental audits, remedy any identified problems, and improve processes where needed.

### Objectives

- 1: The NPS will implement EMS Servicewide by 2012.<sup>a</sup> ✓
- 2: The NPS will emphasize environmental compliance through environmental audits and resolution of any findings.<sup>b</sup> ✓

<sup>a</sup> Executive Order 13423, Section 3, Subsection (b) requires that EMSs be implemented at all appropriate organizational levels. Determination as to where national-, regional-, or park-level EMS are appropriate will be made by the NPS in accordance with DO-13A.

<sup>b</sup> NPS Environmental Audit Program Operating Guide.



Lake level water drop, Lake Mead National Recreation Area, NPS Photo



## Be Climate Friendly and Climate Ready

The NPS will reduce GHG emissions and adapt facilities at risk from climate change.

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“When we try to pick out anything by itself, we find it hitched to everything else in the universe.”

—John Muir 1838–1914

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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 facing the NPS. This strategic goal emphasizes the critical importance of the NPS response to climate change. The primary drivers of greenhouse gas (GHG) emissions are facility energy consumption and fleet operations, and goals in those areas that support reducing GHG emissions can be found later in this document.

### Objectives

- 1: The NPS will reduce Scope 1 and 2 GHG emissions by 35 percent by 2020 from the 2008 baseline.<sup>c</sup>   (Scope 1 and 2 emissions are associated with on-site fossil fuel combustion and electricity consumption from the grid, respectively.)
- 2: The NPS will reduce Scope 3 GHG emissions by 10 percent by 2020 from the 2008 baseline.<sup>d</sup>  (Scope 3 emission sources such as commuter travel and off-site wastewater treatment are indirect in nature.)
- 3: The NPS will develop and implement guidance on adapting the location, structure, or function of park facilities in anticipation of climate change, including severe weather impacts.

<sup>c</sup> Executive Order 13514, Section 2, Subsections (a) and (b) of EO 13514; average Federal reduction target is 28 percent.

<sup>d</sup> Executive Order 13514, Section 2, Subsections (a) and (b) of EO 13514.





Photovoltaic system, Death Valley National Park, NPS Photo



## Be Energy Smart

The NPS will improve facility energy performance and increase reliance on renewable energy.

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“I’d put my money on the sun and solar energy. What a source of power! I hope we don’t have to wait until oil and coal run out before we tackle that.”

—Thomas Edison 1847–1931

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The production of energy to heat, cool, and illuminate buildings and to operate water utility systems is one of the largest contributors to greenhouse gas (GHG) emissions in the United States. Buildings consume 37 percent of the energy and 68 percent of the electricity produced annually in our country. The byproducts of fossil fuel energy generation—including GHG emissions such as nitrous oxide and carbon dioxide—present significant threats to parks. The effects of fossil fuel pollution can be seen in the loss of coral reefs in U.S. Virgin Islands National Park, the shrinking of glaciers in Kenai Fjords National Park, the smog that frequently blankets Big Bend National Park in summer months, and the acid rain that has damaged mountain plants in Shenandoah National Park. To contribute to a national effort to make buildings more energy efficient and to reduce fossil fuel consumption, the NPS must better understand and improve its own energy performance.

### Objectives

- 1: The NPS will reduce Servicewide building energy intensity by 35 percent by 2016 from the 2003 baseline.<sup>e</sup> ✓ ⬆️ (Energy intensity is energy consumption per square foot of building space.)
- 2: The NPS will conduct energy assessments at the most energy-consuming facilities every four years.<sup>f</sup> ✓
- 3: The NPS will improve energy usage tracking to inform energy decisions, beginning with the buildings that consume the most energy.<sup>g</sup> ✓
- 4: The NPS will maximize energy efficiency and reduce fossil fuel consumption in the design and construction of new assets and major renovations.<sup>h</sup> ✓
- 5: The NPS will prioritize the use of energy sources that are renewable and appropriate.<sup>i</sup> ✓

<sup>e</sup> Energy Independence and Security Act of 2007; mandate is 30 percent reduction by 2015.

<sup>f</sup> Energy Independence and Security Act of 2007 requires the NPS to conduct energy and water evaluations in 25 percent of designated covered facilities annually, with every facility evaluated once every 4 years. The top energy-consuming parks are those that account for 75 percent of total NPS annual energy consumption.

<sup>g</sup> Energy Independence and Security Act of 2007.

<sup>h</sup> Energy Independence and Security Act of 2007, Energy Policy Act of 2005.

<sup>i</sup> Executive Order 13423 (50 percent of renewable energy should be consumed from new sources), Energy Policy Act of 2005.



Native desert landscaping, Casa Grande Ruins National Monument, NPS Photo



## Be Water Wise

The NPS will improve facility water use efficiency.

The national and global supply of fresh water has diminished in recent decades, and this trend is likely to continue due to drought and other climatic changes. The impact of water scarcity is already evident at a number of parks, such as Lake Mead National Recreation Area, where a precipitous drop in lake levels has significantly impacted park marina facilities. To contribute to the responsible use of freshwater supplies, encourage groundwater recharge, and protect water quality, the NPS will improve efforts to conserve water, reuse greywater, and capture rainwater.

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“When the well’s dry,  
we know the worth  
of water.”

—Benjamin Franklin  
1706–1790

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### Objectives

- 1: The NPS will reduce potable water use intensity by 30 percent by 2020 from the 2007 baseline.<sup>j</sup> ✓ ⬆️
- 2: The NPS will conduct water use assessments at appropriate facilities every four years.<sup>k</sup> ✓
- 3: The NPS will improve water usage tracking to inform water management Servicewide.

<sup>j</sup> Executive Order 13514, Section 2, Subsection (d); mandate is 26 percent reduction by 2020.

<sup>k</sup> Energy Independence and Security Act of 2007 requires the NPS to conduct energy and water evaluations in 25 percent of the parks determined to account for 75 percent of NPS energy consumption with every facility evaluated once every 4 years.



Hybrid and electric vehicles, Carlsbad Caverns National Park, NPS Photo



## Green Our Rides

The NPS will transform its fleet and adopt greener transportation methods.

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“The civilized man has built a coach, but has lost the use of his feet.”

—Ralph Waldo Emerson  
1803–1882

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Transportation is responsible for approximately 25 percent of the annual greenhouse gas (GHG) emissions in the United States and roughly 40 percent of NPS GHG emissions (including fleet and staff commuting). The NPS will reduce vehicle miles traveled by park employees and transform its fleet into a new generation of fuel efficient, low GHG-emitting vehicles. As NPS employees make choices in their everyday lives, from getting to work to doing their jobs, they should constantly seek to adopt more sustainable transportation methods.

### Objectives

- 1: The NPS will evaluate and transform the size, types of vehicles, and technologies used in its fleet.<sup>1</sup> ✓
- 2: The NPS will increase the use of high-efficiency and low-GHG-emitting vehicles and will reduce fossil fuel consumption by 20 percent by 2015 from the 2005 baseline.<sup>m</sup> ✓
- 3: The NPS will support alternative commuting practices, including employee telework.<sup>n</sup> ✓
- 4: The NPS will reduce GHG emissions attributable to official travel.<sup>o</sup> ✓

<sup>1</sup> Presidential Memorandum on Federal Fleet Performance (2011) requires Federal agencies to perform a right-sizing analysis of their fleets beginning in 2011 and to achieve the targets of the right-sizing analysis by 2015.

<sup>m</sup> Executive Order 13514, Section 2, Subsection (a) requires agencies to reduce total consumption of petroleum products by a minimum of 2 percent annually.

<sup>n</sup> Executive Order 13514, Section 2, Subsection (b) 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.

<sup>o</sup> Executive Order 13514, Section 2, Subsections (a) and (b) regarding reductions in Scope 3 emissions, including official travel.



Waste and recycling receptacles, Wupatki National Monument, NPS Photo



## Buy Green and Reduce, Reuse, and Recycle

The NPS will purchase environmentally friendly products and increase waste diversion and recycling.

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“The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased; and not impaired in value.”

—Theodore Roosevelt  
1858–1919

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The sustainable management of materials used in NPS operations, from the use of locally sourced materials in construction to the diversion of solid waste from landfills, has a significant benefit on the environment. Procurement and disposal of materials result in broad environmental impacts associated with obtaining raw materials, manufacturing, and emissions from landfills. In addition, the use of the product itself can affect the environment, which is why it is important to choose products that have earned the ENERGY STAR® or similar designations for environmentally friendly products.

### Objectives

- 1: The NPS will purchase environmentally preferable products and services in order to improve its Servicewide environmental purchasing program.<sup>p</sup> ✓
- 2: The NPS will reduce electronic waste (such as computers and printers) through environmentally friendly procurement, recycling, and other programs.<sup>q</sup> ✓
- 3: The NPS will utilize sustainable materials in construction and maintenance operations.
- 4: The NPS will continue to quantify, report, and reduce the presence and generation of hazardous waste and toxins in park facilities.<sup>r</sup> ✓
- 5: The NPS will divert 50 percent of annual solid waste from landfills by 2015 through recycling and other practices.<sup>s</sup> ✓

<sup>p</sup> Executive Order 13423, Section 2, Subsection (d) requires agencies to use sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products.

<sup>q</sup> Executive Order 13514, Section 2, Subsection (i) requires agencies to promote electronics stewardship.

<sup>r</sup> Executive Order 13514, Section 2, Subsection (e) requires agencies to reduce and minimize the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed.

<sup>s</sup> Executive Order 13514, Section 2, Subsection (e).



Night sky at Delicate Arch, Arches National Park, image by D. Duriscoe and C. Duriscoe



## Preserve Outdoor Values

The NPS will minimize the impact of facility operations on the external environment.

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“In wildness is  
the preservation  
of the world.”

—Henry David Thoreau  
1817–1862

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Outdoor experiences can be adversely affected by facility operations. Exterior lighting can reduce dark night sky quality and vehicle traffic can diminish the natural silence and sounds of an ecosystem. Reducing the impact of NPS operations on the environment will improve the visitor experience and protect natural and cultural resources through the preservation of night skies, natural sounds, water quality, ecosystems, and viewsheds.

### Objectives

- 1: The NPS will reduce light pollution from park facilities with the goal of dark night sky preservation.
- 2: The NPS will minimize sound pollution in the outdoor environment.
- 3: The NPS will ensure that all facilities and operations are sustainably integrated into the park landscape to minimize impact on the natural and cultural environment.



LEED Visitor Center, Denali National Park & Preserve, photo by Kent Miller



## Adopt Best Practices

The NPS will adopt sustainable best practices in all facility operations.

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“Whenever you do a thing, act as if all the world were watching.”

—Thomas Jefferson  
1743–1826

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The NPS will encourage innovation and the sharing of best practices both internally and externally. Best practices not previously covered in the *GPP* are captured here for facility operations. Objectives include integration of sustainability in planning, compliance with the *Guiding Principles for High Performance and Sustainable Buildings*, ensuring that contracts contain appropriate sustainability language, maintaining healthy indoor environments, and improving management of stormwater runoff.

### Objectives

- 1: The NPS will use Environmental Management Systems as an implementation tool for the *GPP* and will integrate sustainability into all planning initiatives.
- 2: The NPS will comply with the Guiding Principles through the development and implementation of the NPS Sustainable Buildings Implementation Plan.<sup>t</sup> ✓
- 3: The NPS will include applicable sustainability requirements in all new contracts where possible.<sup>u</sup> ✓
- 4: The NPS will ensure clean air and water for healthy workspace environments for park employees and healthy living spaces for employees in NPS housing.
- 5: The NPS will reduce stormwater runoff from existing facilities and employ stormwater best management practices in the design and construction of new facilities and major renovations.<sup>v</sup> ✓

<sup>t</sup> Executive Order 13514, Section 2, Subsection (g) requires all agencies to comply with the Guiding Principles, which is the basis of all recommendations made in the NPS Sustainable Buildings Implementation Plan.

<sup>u</sup> Executive Order 13514, Section 2, Subsection (b) calls on agencies to pursue opportunities with vendors and contractors to address and incorporate incentives to reduce GHG emissions.

<sup>v</sup> Executive Order 13514, Section 2, Subsection (d) calls upon agencies to improve water use efficiency and management by implementing and achieving the objectives identified in the stormwater management guidance developed by the U.S. Environmental Protection Agency.



Ranger with students, Kenai Fjords National Park, NPS Photo



## Foster Sustainability Beyond Our Boundaries

The NPS will engage visitors about sustainability and invite their participation.

With nearly 400 national parks and more than 280 million annual visitors, there is an unprecedented opportunity to demonstrate how the NPS is changing its practices to lessen its impact on the environment. The NPS will explain the science of climate change and the impacts it is having on parks to visitors, partners, and surrounding communities; describe what the NPS is doing to reduce its greenhouse gas (GHG) emissions; and engage youth in sustainability initiatives. The NPS will inform individuals and encourage everyone to take a step toward including sustainable actions in their own homes, workplaces, and communities. Because the single greatest source of GHG emissions in parks is visitor vehicles, the NPS will help park visitors understand the impacts of their travel choices and guide visitors to use alternative transportation methods while moving within the park.

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“If we could change ourselves, the tendencies in the world would also change.”

—Mohandas Gandhi  
1869–1948

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### Objectives

- 1: The NPS will inform park visitors and communities about the actions it is taking to reduce its impact on the environment, and ask them to participate.
- 2: The NPS will identify ways that visitors can reduce the impact of GHG emissions from personal vehicles in parks.
- 3: The NPS will explain the threats to national parks posed by climate change and how it is adapting its management and operations.
- 4: The NPS will increase efforts to engage youth on issues related to sustainability and parks, and provide youth volunteer and employment opportunities.



Appalachian Trail, Shenandoah National Park,  
photo by Bruce McHenry

## Going Forward

In the NPS *Call to Action*, the Service committed to “Go Green” by reducing its carbon footprint before the NPS Centennial in 2016. This *Green Parks Plan* outlines the sustainability vision and sets ambitious goals that will make the NPS a worldwide leader in sustainability. To do so, the NPS must challenge itself to view all of its activities and programs through a lens of sustainability and take advantage of green opportunities whenever possible. The NPS staff must all work together to develop locally driven implementation plans that reflect their collective commitment.

The NPS has the opportunity not only to make its facilities and operations more sustainable, but also to impart to 280 million annual visitors how they can reduce their own impacts on the environment. The Service can demonstrate how resource stewardship and sustainability are connected; working together with visitors, it can make a difference. The NPS also collaborates with communities around the country to support local recreation, conservation, and heritage preservation efforts. Working together with these partners can have a substantial effect on the global effort to use resources more wisely.

NPS staff members are all empowered to be agents of change in this effort, with each office and individual making a valuable contribution. Together, NPS can make our parks and programs models of conservation and preservation by incorporating sustainability opportunities at the individual level and throughout the programs and operations that we manage and work with every day.

For more information on how to integrate *GPP* goals and objectives into your everyday life, go to the following links:

For National Park Service employees and partners:  
[GreenParksPlanInside.nps.gov](http://GreenParksPlanInside.nps.gov)

For the general public:  
[www.nps.gov/greenparksplan](http://www.nps.gov/greenparksplan)