



**CLIMATE***Friendly* PARKS

# National Capital Parks – East Climate Action Plan

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## Introduction

The land and cultural history preserved by National Capital Parks – East is critical to preserving important eras of United States (U.S.) history. In total, the park includes more than 8,000 acres of land, comprised of historic sites related to significant events such as the Civil War and the women’s suffrage and civil rights movements. The park is a network of 13 sites located throughout the District of Columbia and Maryland, including:

Anacostia Park, Baltimore-Washington Parkway, Capitol Hill Parks, Carter G. Woodson Home National Historic Site, Civil War Defenses of Washington – Fort Circle Parks, Fort DuPont Park, Fort Washington Park, Fredrick Douglass Home National Historic Site, Greenbelt Park, Harmony Hall, Kenilworth Park and Aquatic Gardens, Langston Gold Course, Mary McLeod Bethune Council House National Historic Site, Oxon Cove Park/Oxon Hill Farm, Piscataway Park and Sewall Belmont House and Museum.

As the steward of the nation’s most valued public lands, the National Park Service (NPS) has an obligation and an opportunity to be a leader in protecting the environment. As a participant in the Climate Friendly Parks (CFP) program, National Capital Parks – East joins a network of parks that are putting sustainability at the forefront of planning in national parks. The park is leading by example by developing an emission inventory, setting an emissions reduction target, and developing this climate action plan. The park is also committed to educating park staff, visitors, and community members about climate change and the actions National Capital Parks-East is taking to mitigate impacts from park operations. In doing so, the park commits to the following actions with the overall goal of reducing greenhouse gas (GHG) emissions from park operations by 12% below 2008 levels by 2020:

1. Increase energy efficiency for existing assets and operations.
2. Increase the potential for renewable energy use at the park.
3. Promote the use of alternative fuels.
4. Reduce solid waste through increased recycling and composting and by purchasing environmentally preferable products.
5. Reduce wastewater.
6. Increase climate education with National Capital Parks - East staff and visitors, promoting a new mindset that “Stewardship Is Everyday.”
7. Encourage employees to telework, teleconference, and carpool.
8. Communicate with NPS partners and concessioners about the park’s climate action plan.

The National Capital Parks – East climate action plan serves to support and enhance existing initiatives such as the park’s environmental management system (EMS) and the NPS National Capital Region’s EMS. An EMS is a management tool and organizational means to apply continuous improvement principles and strategic planning methods that reduce environmental impacts and achieve sustainability goals. The park’s EMS addresses all environmental programs at the park, and provides the context for actions related to reducing park emissions, including this Climate Action Plan. The Region’s EMS includes energy and GHG reduction goals as outlined in Executive Orders 13423 and 13514 that extend to the park level.

## The Challenge of Climate Change

Earth’s atmosphere has a natural supply of GHGs. These gases capture heat and keep the planet’s temperature warm enough for life to survive. However, human actions are disturbing this balance through the over-production of



greenhouse gases including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). These gases—which can stay in the atmosphere for at least fifty years and up to centuries—are accumulating in the atmosphere faster than natural processes are able to remove them, in effect, creating an extra-thick heat blanket around the Earth. The

*“Scientists project that if the increase in man-made greenhouse gas emissions continues unabated, temperatures could rise by as much as 11°F by the end of this century, likely causing dramatic—and irreversible—changes to the climate, with profound consequences for humanity and the world as a whole.”*

*-Pew Center on Global Climate Change  
Climate Change 101*

Source: [www.pewclimate.org/docuploads/101\\_science\\_impacts.pdf](http://www.pewclimate.org/docuploads/101_science_impacts.pdf)

increase in GHGs is causing an overall warming of the planet, commonly referred to as *global warming*. The term *climate change* describes the variable consequences of global warming over time.

Climate change presents significant risks and challenges to the NPS. The continued addition of GHGs to the atmosphere will raise the Earth’s average temperature even more rapidly in the next century; a global average warming of 4-7° F by the year 2100 is considered likely.<sup>1</sup> Rising global temperatures will further raise sea level and affect all aspects of the water cycle, water temperature, ocean currents and upwelling, salinity levels of inland coastal waters, and snow cover. Increased volatility of weather is expected. Climate change is also expected to affect human health, alter crop production, animal habitats, and many other features of our natural

and managed environments. In the mid-Atlantic region of the U.S., the impacts of climate change are expected to be greater than average due to the large coastline, numerous barrier islands, two major estuaries, and high population densities on oceans and waterways in cities such as Philadelphia and Washington D.C. Relative sea-level rise rates in this region are higher than the global mean, and generally range between 2.4 and 4.4 millimeters per year<sup>2</sup> (rates for Washington, DC are approximately 3.13 mm/year<sup>3</sup>). Increasing climate change is expected to double that rate, which would cause sea levels to rise an additional 15-40 inches by the end of the century.<sup>4</sup>

At National Capital Parks – East, changes in temperatures will alter the natural landscape of the park’s structures and open space, and change both the habitats available for species and resources available for park visitor recreation.

## National Capital Parks – East and Climate Change

Based on the information above, climate change may affect the natural, cultural and historical resources entrusted National Capital Parks- East. The following potential climate change impacts were considered throughout the development of this climate action plan:

- The impact of weather changes on structures and statues.
- Shifts in tourism trends related to temperature changes.
- Changes in growing season patterns.

## Inventory Process

The park’s GHG emissions inventory was completed using the Climate Leadership in Parks (CLIP) tool. The CLIP tool was developed by the CFP program in association with the U.S. Environmental Protection Agency (EPA) to account for GHG emissions specific to national parks. The tool is designed to:

- Educate park employees about the emissions inventory process.
- Assist with identifying strategies for each park to reduce emissions.
- Enable park personnel to track current and future progress towards emissions reduction goals.

<sup>1</sup> IPCC 2007. Climate Change 2007: The Physical Science Basis. Intergovernmental Panel on Climate Change, Geneva Switzerland. Available online at: <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>

<sup>2</sup> Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region. U.S. Climate Change Science Program. Synthesis and Assessment Product 4.1 January 2009. Available online at: [www.epa.gov/climatechange/effects/coastal/pdfs/SAP\\_4-1\\_SynthesisandAssessmentProduct.pdf](http://www.epa.gov/climatechange/effects/coastal/pdfs/SAP_4-1_SynthesisandAssessmentProduct.pdf)

<sup>3</sup> The Impact of Climate Change on the Mid-Atlantic Region. U.S. EPA Mid-Atlantic Air Protection website. Accessed June 2011. Available at: [www.epa.gov/reg3atrd/globalclimate/ciimpact.html](http://www.epa.gov/reg3atrd/globalclimate/ciimpact.html)

<sup>4</sup> How Will Climate Change Affect the Mid-Atlantic Region? U.S. EPA Region 3 Fact Sheet EPA/903/F-00/002. June 2001. Available at: [http://oaspub.epa.gov/eims/eimscomm.getfile?p\\_download\\_id=4011](http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=4011)

National Capital Parks – East staff gathered the necessary activity data for the baseline inventory year, fiscal year (FY) 2008, and requested data from the park’s concessioners. The data was entered into the tool which then automatically estimated GHG emissions. The CLIP tool calculates CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions and converts the data into “metric tons of carbon dioxide equivalent” (MTCO<sub>2</sub>e), a single unit that allows for a comparison between different GHGs.<sup>5</sup>

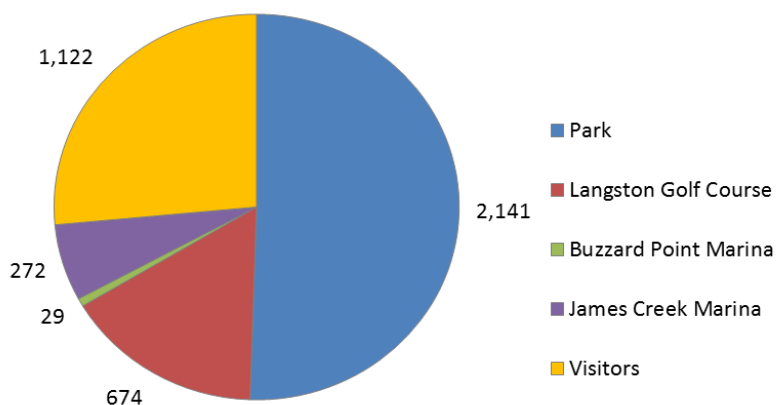
## National Capital Parks – East Emissions Profile

GHG emissions result from a variety of activities that take place on park property. Some sources of park emissions are more obvious than others. For example, the combustion of fossil fuels for energy, employee travel, and visitor transportation releases GHG emissions. A less obvious activity is the decomposition of waste and other organic matter. In 2009, waste decomposing in landfills was the third largest human-generated source of CH<sub>4</sub> emissions in the United States.<sup>6</sup> Park inventories also include volatilization or release of GHGs from fertilizer and refrigerant use.

The National Capital Parks – East GHG inventory includes emissions from park operations, visitor travel (mobile combustion) in the park, and concessioner operations. The top three park activities that emit the most GHGs include: electricity use, employee and visitor mobile combustion, and municipal solid waste disposal. Concessioners include Langston Golf Course, Buzzard Point Marina, and James Creek Marina. Langston Golf Course manages a nine-hole course located five minutes from Capitol Hill. Buzzard Point Marina and James Creek Marina both provide docking services on the Anacostia River. Buzzard Point Marina has individual electrical meters for each docking station, while James Creek Marina charges a flat rate for electricity rather than individually metering electricity use. This is important to consider when looking at the specifics of their emissions profile.

GHG emissions from park operations, concessioners, and visitors for FY2008 total 4,238 MTCO<sub>2</sub>e. 2,141 MTCO<sub>2</sub>e, which is almost 51 % of total emissions, are from park operations. 975 MTCO<sub>2</sub>e, or 23% of total emissions, are from the park’s concessioners, while 1,122 MTCO<sub>2</sub>e, or 26 % of total emissions, are from visitors. See Figure 1 below.

**Figure 1. National Capital Parks – East Park Operations, Visitor, and Park Concessioner FY08 Greenhouse Gas Emissions (Total: 4,238 MTCO<sub>2</sub>e)**

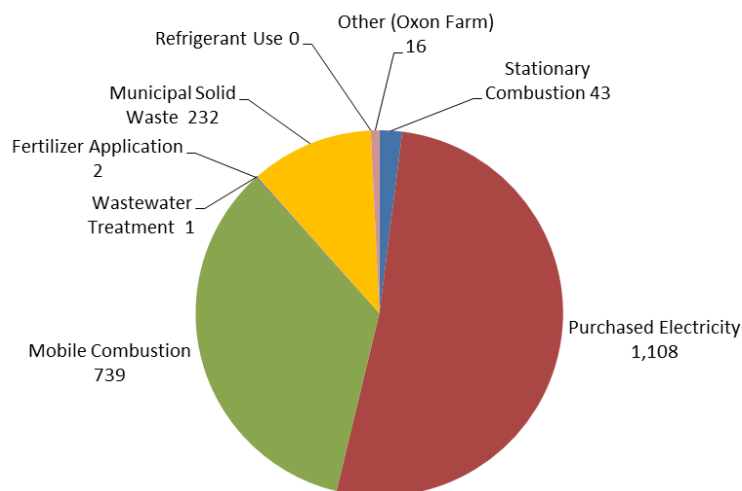


<sup>5</sup> The conversion of a GHG to MTCO<sub>2</sub>e is based on the potential of that GHG to contribute to the greenhouse effect. This is its global warming potential (GWP). To normalize GHGs, CO<sub>2</sub> is given the GWP of 1. CH<sub>4</sub>'s GWP is 21 and N<sub>2</sub>O's GWP is 310, meaning that an equivalent amount of CH<sub>4</sub> has 21 times the potential of CO<sub>2</sub> and N<sub>2</sub>O has 310 times the potential of CO<sub>2</sub> to contribute to global warming.

<sup>6</sup> Methane: Sources and Emissions. U.S. EPA website. Accessed June 2011. Available at: [www.epa.gov/methane/sources.html](http://www.epa.gov/methane/sources.html)

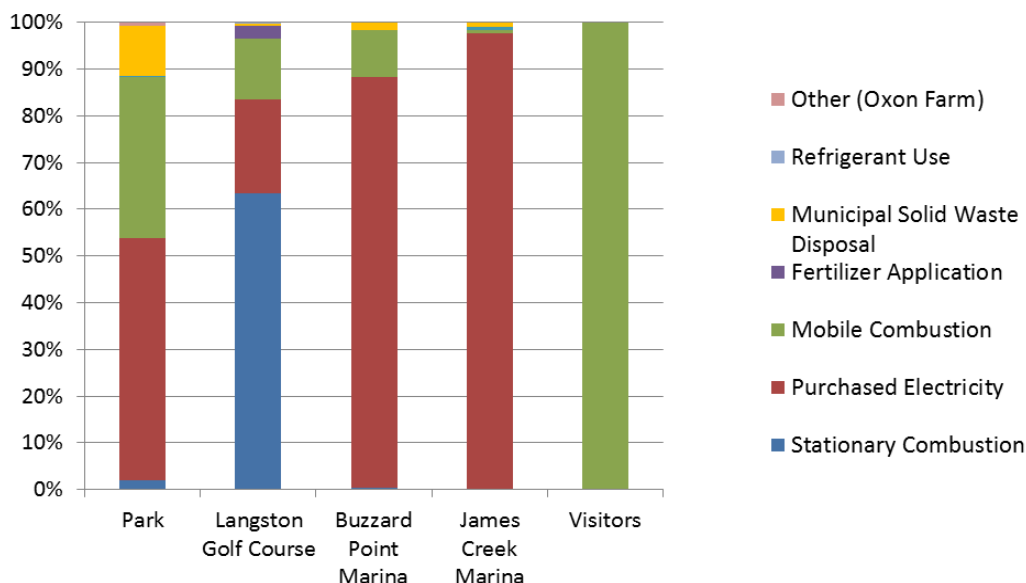
In order to target emissions reductions efforts, the park assessed emissions from park operations by source. At 1,108 MTCO<sub>2</sub>e (52%) the largest portion of park operations emissions are from purchased electricity. At 739 MTCO<sub>2</sub>e (35%) and 232 MTCO<sub>2</sub>e (11%), mobile combustion and municipal solid waste disposal are the next largest sources, respectively. See Figure 2 below.

**Figure 2. National Capital Parks – East Park Operations GHG Emissions by Source (Total: 2,141 MTCO<sub>2</sub>e)**



The emissions profile for each group (park operations, concessioners and visitors) is different, but aligns with each organization’s activities. About half of the park’s emission sources come from purchased electricity while close to 90% of both marina’s emissions come from purchased electricity. This is most likely because both marinas provide electrical hookups for the boats when docked. The water surrounding the marinas is managed by the city of Washington D.C. and not considered park property. Therefore, watercraft emissions were not included in the inventory. Langston Golf Course’s largest emissions source is stationary combustion. The only visitor emissions source analyzed was emissions from transportation in the park. See Figure 3 below.

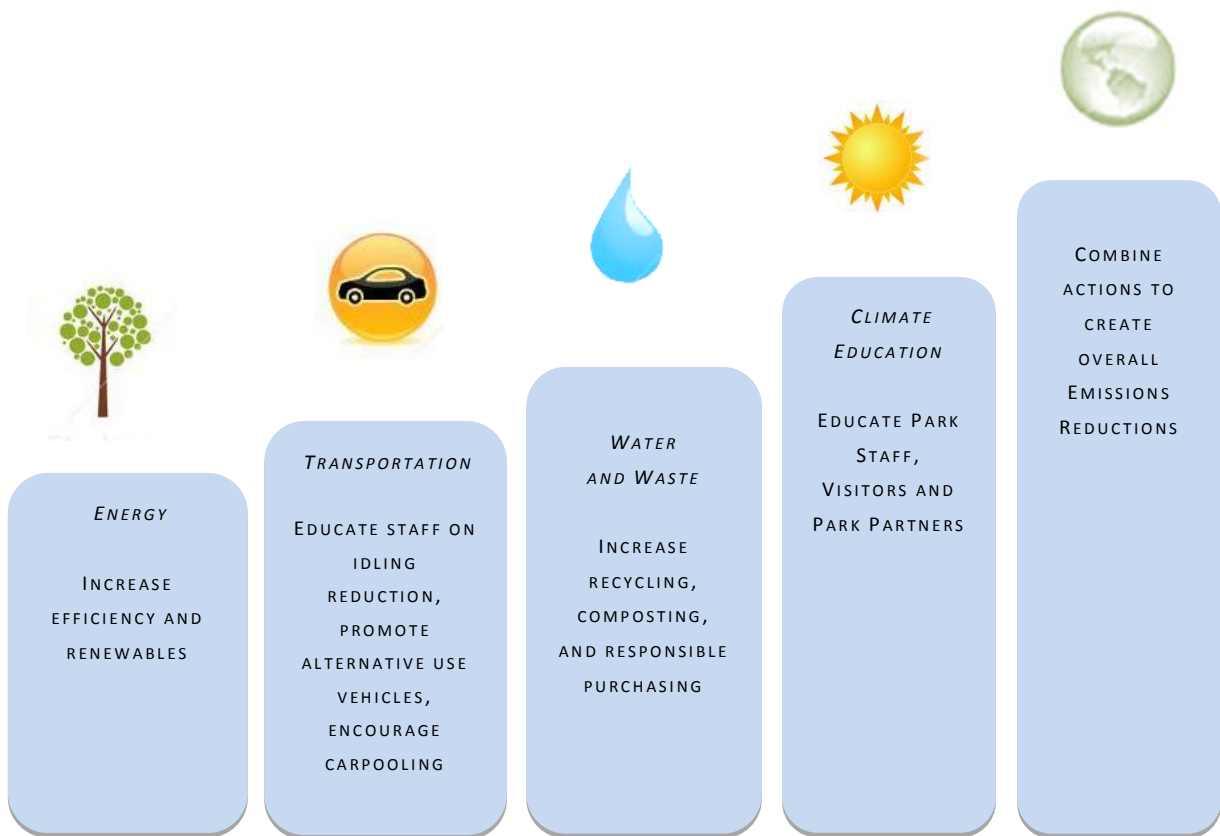
**Figure 3. National Capital Parks – East Park Operations, Visitor and Concessioner GHG Emissions Percent Contribution By Source**



## Strategies for Reducing Emissions

National Capital Parks – East developed GHG reduction goals and actions during the park’s CFP action planning workshop held January 18-19, 2011 at National Capital Parks- East. The park’s proposed emissions reduction strategies focus on: energy consumption, transportation, water use, waste generation, and climate change education. Developing and implementing a comprehensive action plan will help to reduce emissions and educate staff and visitors. Select strategies to reduce emissions are depicted in the diagram below and are prioritized based on emission reduction potential, cost-effectiveness, feasibility, co-benefits, regional impact, and ability to rapidly implement.

**The goals discussed below result in an overall reduction in GHG emissions from park operations by 12% below 2008 levels by 2020.**





## STRATEGY 1: REDUCE GHG EMISSIONS FROM PARK ENERGY USE BY 10 PERCENT BELOW 2008 LEVELS BY 2016

Approximately 50% of GHG emissions at the park result from energy use in facilities. Therefore, National Capital Parks – East will continue to focus on energy conservation measures such as improving insulation and reducing electricity use first, then implementing the action below. In addition to reducing GHG emissions, reducing energy use will provide the park with financial savings from reduced energy costs.

### **Progress to date:**

- Motion detector switches are installed in offices and comfort stations.
- HVAC systems are replaced with more energy efficient options when needed.
- IT updates are conducted only once a week so that computers can be turned off at night.

### **National Capital Parks – East commits to the follow actions in order to reduce park energy use:**

- 1** Increase energy efficiency of existing assets and operations.
  - Replace inefficient lighting with more efficient alternatives described in the 2010 Energy Audit Report.
  - Lock and set thermostats for a set range of seasonally appropriate temperatures at sites where this has not yet be done.
  - Decrease the number of personal electronics (e.g.:space heaters, coffee pots, refrigerators).
- 2** Increase the potential for renewable energy use at the park.
  - Assign an employee to focus on park energy efficient upgrades and incorporating renewable energy.
- 3** Improve processes related to energy management.
  - Research opportunities for alternative employee work schedules and telecommuting.



## STRATEGY 2: REDUCE GHG EMISSIONS FROM TRANSPORTATION BY 15 PERCENT BELOW 2008 LEVELS BY 2020

Employee and visitor transportation within the National Capital Parks – East is the second largest source of GHGs. Therefore, reducing vehicle miles traveled, improving vehicle efficiency, and using alternative fuels can significantly reduce the park's emissions.

### **Progress to date:**

- Preventive maintenance schedule has been improved to increase the efficiency of the vehicle fleet.
- Staff are informed about the benefits of the SmartTrip program and receive incentives for using SmartTrip.
- Old vehicles are continually replaced with more efficient GSA leased vehicles.
- Vehicle fleet size is right sized when appropriate.
- On-site computer training center has been set up to reduce employee travel for training.



## National Capital Parks – East commits to the following actions to reduce park emissions from transportation:

- 1 Reduce employee emissions within the park.
  - Reduce idling in the park by rotating drivers, installing GasBoy systems in vehicles to monitor idling and oil use, and posting 'No Idling' signs in parking lots and vehicles.
  - Educate private bus transporters about the park's no idling policy.
  - Explore the Department of Energy's Clean Cities program and consider joining the Greater Washington Region Clean Cities Coalition.
  - Reduce lawn mowing and limit leaf blowing at Fort DuPont Park, Fort Washington Park, and Oxon Hill Farm.
  - Identify vehicles by fuel efficiency using colored key tags.
  - Bring in local high school students, interns, Student Conservation Association (SCA) students to help with preventive vehicle maintenance.
- 2 Promote the use of alternative fuels.
  - Increase the use of hybrids and flex fuel vehicles and coordinate with other parks to learn about current technologies.
  - Consider alternative fuels for small engines.
- 3 Increase staff teleworking, teleconferencing, carpooling and commuting.
  - Share teleworking standard operating procedures (SOP).
  - Expand videoconferencing capabilities to reduce the need for staff to travel to other park sites for conference calls and meetings.
  - Encourage staff to consolidate trips and ride-share by providing incentives.
- 4 Educate visitors about emissions within the park.
  - Establish accurate baseline on visitor transportation and associated emissions.
  - Share information on emissions from visitor transportation with visitors through interpretive programs and educational materials.



## STRATEGY 3: REDUCE GHG EMISSIONS FROM WASTE AND WASTEWATER BY 15 PERCENT BELOW 2008 LEVELS BY 2020

Waste management—in the form of source and solid waste reduction—can dramatically reduce GHG emissions. Reducing the amount of waste sent to landfills reduces CH<sub>4</sub> emissions caused by decomposition as well as the GHGs emitted from the transportation of waste. Purchasing and wise use of efficient products and fixtures is closely tied to reducing waste generation and wastewater. The less the park and its visitors consume in terms of products and packaging, and the less wastewater is generated, the less energy is used and fewer GHGs are emitted.

### Progress to date:

- Implemented a successful recycling program which includes oil, tires, antifreeze, car batteries, compact fluorescent bulbs, plastics, steel, paper, ink cartridges, and electronics.
- Reduced overall waste stream quantities by successfully combating illegal dumping on park property through partnerships with the state and private partners.
- Introduced composting at Oxon Hill Farm.
- Computers are set to default print double-sided.
- Acquisition planning meetings are conducted every six months.
- Toilets replaced with low flow models.

**National Capital Parks – East commits to the following actions to reduce park emissions from waste generation:**

- 1** Reduce solid waste through increased recycling and composting.
  - Improve current recycling program by researching decentralization, expand recycling program to include Styrofoam, and consolidating recycle pickup to increase efficiency.
  - Investigate becoming a “Trash Free Park” at Fort Washington Park, Greenbelt Park, Fort DuPont Park.
  - Hand out trash bags to visitors for a refundable deposits to encourage visitors to keep picnic areas clean.
  - Work with concessioners to encourage recycling.
  - Explore the potential for creating a pilot trash-free site to serve as an educational opportunity.
  
- 2** Reduce solid waste through increased responsible purchasing.
  - Consolidate procurement for cleaning products and tie funds to particular projects.
  - Centralize park purchasing.
  - Provide training for and monitor green procurement for all authorized charge card holders.
  - Include fleet purchases and education in green procurement training.
  - Increase communication between staff in the field and procurement person.
  
- 3** Reduce Wastewater.
  - Purchase and install low-flow faucets.



## **STRATEGY 4: INCREASE CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS REDUCTION EDUCATION AND OUTREACH**

National Capital Parks – East is visited by millions of people from around the world annually. The park has an enormous opportunity to educate the public about climate change and GHG emissions reductions. There are also opportunities to educate park staff and members of the surrounding community.

**Progress to date:**

- Climate friendly booklet included in the Junior Ranger Program.
- Earth Day programs are active across different park units.
- Implemented “green” tailgate meetings.
- Green Team messages are shared on the park website.

**National Capital Parks – East commits to the following actions to increase climate change education with park staff, visitors and the local community.**

- 1** Increase climate education with National Capital Parks – East staff.
  - Use the consistent message, “Stewardship Is Everyday”, to change the park mindset and integrate stewardship into all park operations.
  - Incorporate green messages into all internal communications, allow staff to share best practices using the Ranger Roundtable, and post information in staff break rooms.
  - Develop reminders for staff to turn off electronics.
  - Create an internal park contest between sites to promote energy reduction and award individuals and sites for reducing GHG emissions.

- Establish an Educational Group at all park units that provides information and resources on climate change.
- Integrate green messaging into staff training including new staff orientation, provide specialized training for staff, such as maintenance staff on relevant issues.
- Consider how the Alice Ferguson Foundation could help evaluate the effectiveness of environmental training and educational programs.

## 2 Increase climate education with National Capital Parks- East visitors.

- Educate visitors on recycling and other park stewardship initiatives with more signs around the park that explain what the park is doing and the shared responsibility.
- Incorporate climate change and stewardship messaging into all external communications including interpretive programs and *Beyond the Capital* publication.
- Develop a climate change visitor program that includes the parks climate change initiatives . Update park web materials and social networking to always include green messaging .

## 3 Communicate with NPS partners and concessioners about the park’s climate action plan.

- Park staff will attend community meetings, involve community leaders, and hold park open houses .
- Train park concessionaires on measuring GHG emissions with the CLIP tool.

## Conclusion

National Capital Parks – East has a unique opportunity to educate and to set an example for the millions of visitors to our nation’s capital every year. This report summarizes the actions by which the park commits to reducing its GHG emissions. By addressing GHG emissions from the largest sources, the park will tackle emissions reductions in an effective way. Additionally, by sharing these goals and strategies with park visitors, concessioners and partners National Capital Parks – East will promote an awareness of climate change and promote actions to reduce GHG emissions on a broader scale.

