



CLIMATE *Friendly* PARKS

# John Muir & Eugene O'Neill National Historic Sites Action Plan

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## JOHN MUIR AND EUGENE O'NEILL NATIONAL HISTORIC SITES BECOME CLIMATE FRIENDLY PARKS

As participants in the Climate Friendly Parks program, John Muir National Historic Site and Eugene O'Neill National Historic Site belong to a network of parks nationwide that are putting climate friendly behavior at the forefront of sustainability planning. By conducting an emission inventory, setting an emission reduction goal, developing this Action Plan, and committing to educate Park staff, visitors, and community members about climate change, John Muir and Eugene O'Neill National Historic Sites (NHS) provide a model for climate friendly behavior within the National Park Service.

John Muir and Eugene O'Neill National Historic Sites, as members of the Pacific West Region, are involved in the first regional effort in the National Park Service to become Carbon Neutral. The Region has developed a vision of having its park operations be carbon neutral and having all of its parks be a member of the Climate Friendly Parks Program by 2010.

This Action Plan identifies steps that John Muir NHS and Eugene O'Neill NHS can undertake to reduce greenhouse gas (GHG) emissions and adapt to current and future impacts of climate change. The plan presents the Parks' emission reduction goals, and associated reduction actions to achieve the Parks' goals. Strategies and action plan items were developed by working groups at San Francisco Bay Area Network Climate Friendly Parks (CFP) Workshop.<sup>1</sup> While the plan provides a framework needed to meet the Parks' emission reduction and adaptation goals, it is not intended to provide detailed instructions on how to implement each of the proposed measures. The Parks' Environmental Management System will describe priorities and details to implement these actions, integrating emission reduction strategies into regular Park operations and activities.

John Muir NHS and Eugene O'Neill NHS aim to reduce Park operations:

- Energy use emissions to 35 percent below 2008 levels by 2016.
- Transportation emissions to 20 percent below 2008 levels by 2016.
- Waste emissions to 40 percent below 2008 levels by 2016 through waste diversion and reduction.

To meet these goals, the Parks will implement strategies proposed in this plan that relate to the Parks' current and future emission inventories. Specifically, the plan recommends three strategies:

**Strategy 1:** Identify and implement mitigation actions that the Parks can independently take to reduce GHG emissions resulting from activities within and by the Parks

**Strategy 2:** Increase climate change education and outreach efforts

**Strategy 3:** Monitor progress with respect to reducing emissions and preserving natural and cultural resources and infrastructure and identify areas for improvement

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<sup>1</sup> Original notes from these workshops, including detailed action items not presented in the final plan have been archived by John Muir and Eugene O'Neill National Historic Sites and are available upon request.

## THE CHALLENGE OF CLIMATE CHANGE

Climate change presents significant risks and challenges to the National Park Service and specifically to John Muir NHS and Eugene O'Neill NHS. Scientists cannot predict with certainty the general severity of climate change nor its impacts. Average global temperatures on the Earth's surface have increased about 1.1°F since the late 19<sup>th</sup> century, and the 10 warmest years of the 20<sup>th</sup> century all occurred in the last 15 years. The single leading cause of this warming is the buildup of GHGs in the atmosphere—primarily carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O)—which trap heat that otherwise would be released into space.

The continued addition of CO<sub>2</sub> and other GHGs to the atmosphere will raise the Earth's average temperature more rapidly in the next century; a global average warming of 4-7°F by the year 2100 is considered likely.<sup>2</sup> Rising global temperatures will further raise sea levels and affect all aspects of the water cycle, including snow cover, mountain glaciers, spring runoff, water temperature, and aquatic life. Climate change is also expected to affect human health, crop production, animal and plant habitats, and many other features of our natural and managed environments. Rise in sea level threatens coastal land, wetlands, groundwater systems, infrastructure (built environment) and human population. Increasing sea level rise compounded with increased storm intensity and frequency could result in flooding of the bay tributaries. The East Bay network parks would face complications in transportation, water availability and infrastructure damage. Change in temperature would also affect the Bay Area ecology, potentially impacting animal and plant range of habitat. Less mobile and adaptable species would face population decline and potentially extirpation. Increasing temperature and change in precipitation could lead to a buildup of fuel for wildfires, resulting in more frequent and intense wildfire.

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<sup>2</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> >

# GREENHOUSE GAS EMISSION INVENTORY AT JOHN MUIR AND EUGENE O'NEILL NATIONAL HISTORIC SITES

Naturally occurring GHGs include CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and water vapor. Human activities (e.g., fuel combustion and waste generation) lead to increased concentrations of these gases (except water vapor) in the atmosphere.

## Greenhouse Gas Emissions

Greenhouse gas emissions result from the combustion of fossil fuels for transportation and energy (e.g., boilers, electricity generation), the decomposition of waste and other organic matter, and the volatilization or release of gases from various other sources (e.g., fertilizers and refrigerants). The main sources of energy consumption at John Muir NHS and Eugene O'Neill NHS are natural gas and purchased electricity.

In 2008, GHG emissions at John Muir NHS totaled 51 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>E) and Eugene O'Neill NHS totaled 38 MTCO<sub>2</sub>E. These totals include emissions from the Parks' operations. For perspective, a typical single family home in the U.S. produces approximately 12 MTCO<sub>2</sub> per year.<sup>3</sup> Thus, the emissions from John Muir NHS are roughly equivalent to the emissions from the energy use of 4 households each year, and Eugene O'Neill NHS is roughly equivalent to the emissions from the energy use of 3 households each year.

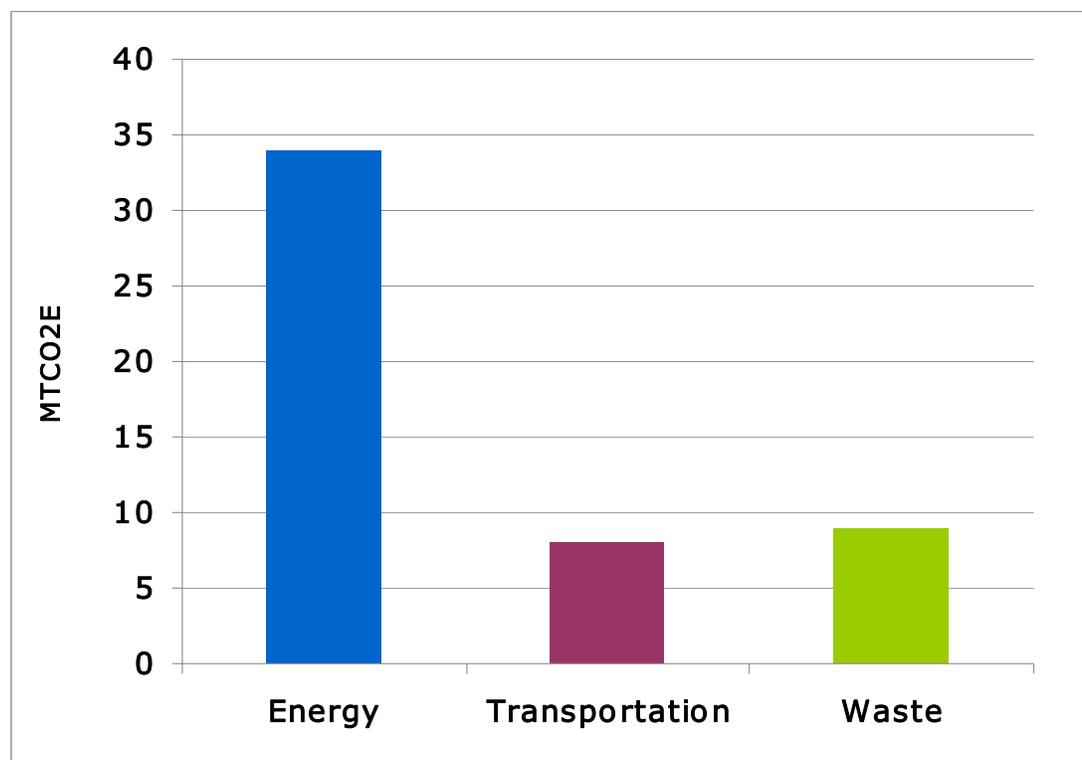
The largest emission sector for John Muir NHS and Eugene O'Neill NHS is energy, totaling 34 MTCO<sub>2</sub>E at John Muir NHS (Fig 1 and Table 1) and 23 MTCO<sub>2</sub>E at Eugene O'Neill NHS (Fig 2 and Table 2).

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<sup>3</sup> U.S. EPA, Greenhouse Gases Equivalencies Calculators – Calculations and References, Retrieved , Website: <http://www.epa.gov/RDEE/energy-resources/calculator.html>

## FIGURE 1

*John Muir National Historic Site 2008 Park Operations Emissions by Sector*



## TABLE 1

*John Muir National Historic Site 2008 Park Operations Emissions by Sector and Source*

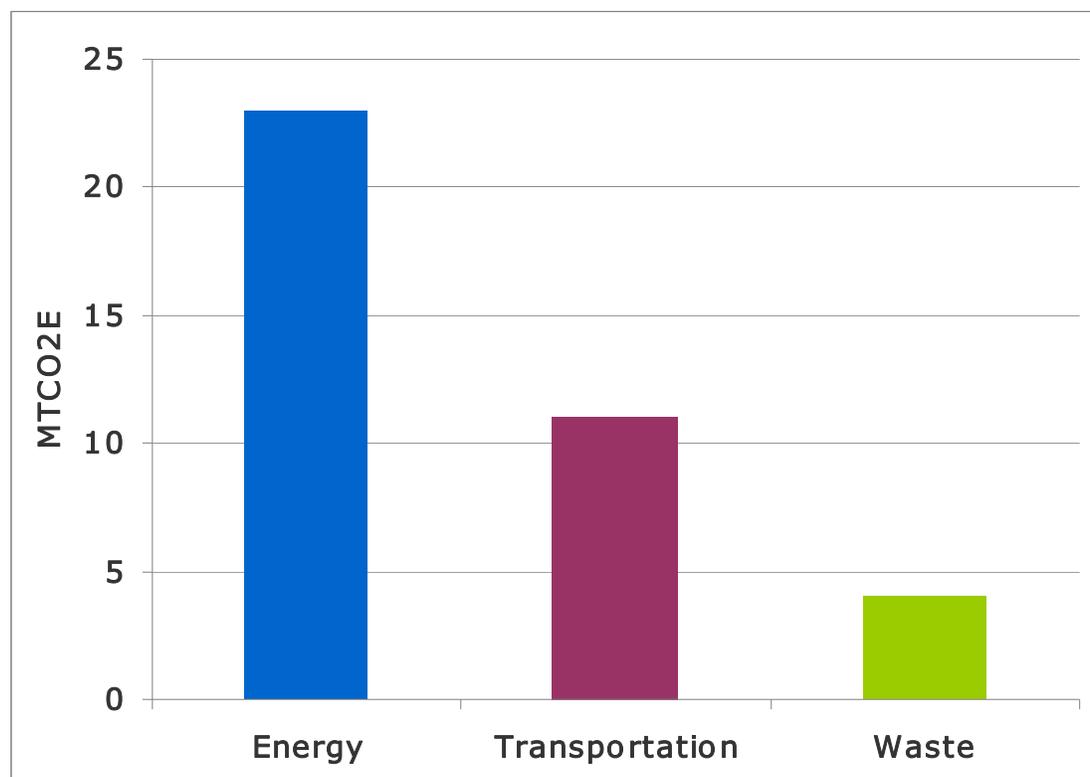
<b>Energy</b>	<b>34</b>
Stationary Combustion	22
Purchased Electricity	12
<b>Transportation</b>	<b>8</b>
Mobile Combustion	8
<b>Waste</b>	<b>9</b>
Landfilled Waste	8
Wastewater	1
<b>Total</b>	<b>51</b>

Note - Totals may not sum due to rounding

Not applicable data sources represented by "-"

## FIGURE 2

*Eugene O'Neill National Historic Site 2008 Park Operations Emissions by Sector*



## TABLE 1

*Eugene O'Neill National Historic Site 2008 Park Operations Emissions by Sector and Source*

<b>Energy</b>	<b>23</b>
Stationary Combustion	13
Purchased Electricity	10
<b>Transportation</b>	<b>11</b>
Mobile Combustion	11
<b>Waste</b>	<b>4</b>
Landfilled Waste	2
Wastewater	2
<b>Total</b>	<b>38</b>

Note - Totals may not sum due to rounding

Not applicable data sources represented by "-"

# John Muir and Eugene O'Neill National Historic Sites Respond to Climate Change

*The following actions were developed during the CFP workshop hosted by San Francisco Maritime National Historical Park on October 27<sup>th</sup> and 28<sup>th</sup>, 2009, in order to meet the Parks' climate change mitigation goals.*

## STRATEGY 1: REDUCE GHG EMISSIONS RESULTING FROM ACTIVITIES WITHIN AND BY THE PARKS

John Muir NHS and Eugene O'Neill NHS have developed a set of actions that the Parks are committed to taking in order to reduce emissions from activities within and by the Parks. These actions have been prioritized based on a qualitative assessment of a set of criteria including: emission reduction potential, cost-effectiveness, feasibility, co-benefits, regional impact, and ability to rapidly implement. Actions that John Muir NHS and Eugene O'Neill NHS will take have been presented below in order from highest to lowest priority within each sub-category.

### Energy Use Management

*Emission Reduction Goal: Reduce Park operations energy use emissions at each Park to 35 percent below 2008 levels by 2016.*

Improving energy efficiency and implementing alternative energy sources reduces Park-based fuel use, lowers GHG emissions, decreases electricity consumption, and offers monetary benefits for the Parks. Emissions inventory results indicate that 74 percent of John Muir NHS and 67 percent of Eugene O'Neill NHS's GHG emissions from Park Operations are from energy consumption. Consequently, John Muir NHS and Eugene O'Neill NHS identified actions to reduce energy-related emissions. Presented below are the actions that are currently under way and which comprise the Parks' progress to date, as well as those actions the Parks will pursue.

#### Progress to Date

- Adjusted programmable thermostat and work schedules to maximize building efficiency. Thermostats turn off at 3:00 PM.
- Monitoring energy bills for consumption and cost variations.
- Continuously use Watt Meters and energy use displays to track and display the energy consumption of electronic devices to encourage energy efficient use.
- Installed solar powered lighting in John Muir NHS parking lot.



### Energy Use Management – Planned Actions

#### 1 Promote energy efficiency and energy conservation in the Park through behavioral change

- Encourage energy conservation in all Park activities through actions including turning off lights and other electronics, enabling computer and monitor "hibernate" settings, using natural lighting, and reducing water use.

- Develop a mandatory energy-saving training program and new employee orientation. Those who complete the training can verify the information covered by signing a checklist.
- Establish and revitalize Operations and Maintenance to ensure reliability, safety, and energy efficiency.
  - Continue to incorporate operations and maintenance schedule into environmental management systems to make sure scheduling is followed.
  - Work with maintenance staff to address energy losses from steam, water and air leaks, uninsulated lines, maladjusted or inoperable controls, and other losses from poor maintenance.
- Maintain programmable thermostats and adjust to maximize building efficiency. Encourage employees to be mindful of adjustments and to turn off system if windows are open.

## 2 Upgrade lighting options

- Upgrade all light bulbs in Parks to energy efficient bulbs.
  - Use high intensity discharge (HID) lamps and/or fluorescent lights (T-8's or T5's with electronic ballasts) in all fixtures used for more than 3 hours a day.
  - Replace incandescent light bulbs with Compact Fluorescent Light bulbs (CFLs) where appropriate.
- Effectively utilize natural lighting by bringing it into buildings via conventional glazing, light shelves, skylights and clerestory windows.
- Install lighting controls such as motion sensors and make sure that a recommissioning schedule is in place to ensure appropriate use.
- Install energy efficient exit signs, street lighting, utilize solar lighting where feasible

## 3 Heating, Ventilation, and Air Conditioning (HVAC)

- Develop and implement a monthly HVAC inspection schedule for coils, filters, dampers, and fans and maintenance schedule that ensures timely replacement and cleaning.

## 4 Switch to more efficient electronics and devices

- Ensure that all new electronics and office equipment are ENERGY STAR qualified. Rather than purchasing individual copy, fax, print and scanning equipment, consider a multifunctional device, which can save space and energy.
  - Work with procurement and vendors to make sure that CFLs, T8s, and energy efficient appliances are made available. Adhere to auditing procedure of green purchasing document.
  - Refer the Federal Energy Management Program guidelines for purchasing energy efficient appliances in accordance with federal procurement procedures.
  - Ensure that all new electronic/office equipment is ENERGY STAR qualified.

- Default computers and printers to print double-sided printing. This can easily be changed back to single sided printing as needed. Set the default settings on all computers and copiers to double-sided printing.
- Ensure all computers' power management settings follow current ENERGY STAR recommendations. Set computers to enter system standby or hibernation mode after 30 minutes of inactivity and monitors to enter sleep mode after 15 minutes of inactivity.
- Replace existing boilers and furnaces with energy-efficient models.
- Install energy efficient water heaters.

## 5 Improve building structures and envelopes

- Complete an energy audit of all structures in the Park. Building energy audits can provide insightful information into unknown building energy losses as well as assess the relative energy efficiency of the building portfolio.
- Review and implement the DOI Sustainable Buildings Implementation Plan, which provides guidance for improving the energy performance of new and existing buildings.
- Install building level utility meters including new major construction and renovation projects to track and continuously optimize performance.
- Where appropriate, replace old windows with new windows (e.g. spectrally selective glass, double glazed, low-e systems, gas filled windows, and electrochromic windows) that provide better insulation and solar selectivity.

## 6 Utilize alternative energy sources

- Install photovoltaic panels on Park buildings, parking lots, open areas, etc. Photovoltaic panels both generate electricity as well as (if placed correctly) decrease building energy use by reducing solar heat gain.

## Transportation Management

*Emission Reduction Goal: Reduce Park operations transportation emissions at each Park to 20 percent below 2008 levels by 2016.*

Reducing vehicle miles traveled, improving vehicle efficiency, and using alternative fuels can significantly reduce John Muir and Eugene O'Neill National Historic Sites emissions. As the inventory results indicate, GHG emissions from transportation comprise 29 percent of John Muir NHS Park operations emissions and 16 percent of Eugene O'Neill NHS Park operations emissions. Presented below are the actions that are currently under way and which comprise the Parks' progress to date, as well as those actions that the Parks will pursue.



## Progress to Date

- Continue to use alternative fuel vehicles whenever possible.
- Visitors traveling to the Eugene O'Neill NHS must take a compressed natural gas (CNG) fueled shuttle bus.

## Transportation Management – Planned Actions

### 1 Transportation-related Behavioral Changes

- Encourage staff carpooling for commuting to work.
- Use webinars/conference calls to avoid excessive travel, both within and outside of the Park. Purchase necessary equipment for teleconferencing and videoconferencing.
- Prohibit staff vehicle idling unless required for vehicle maintenance.
  - Create dashboard idling guidelines and post in vehicles.
- Encourage visitors to carpool and provide alternative modes of visitor travel.
- Assess need for leaf blowing and consider manual sweeping whenever possible.

### 2 Reduce NPS vehicle and equipment fuel consumption

- Promote efficient driving through the use of employee trainings and dashboard signage.
- Identify areas to reduce or eliminate mowing.
- Analyze fleet fuel consumption patterns for efficiency improvements.
- Replace two-stroke engines with more efficient four-stroke engines.

### 3 Replace NPS vehicles and equipment

- Benchmark existing fleet-wide mile per gallon average and raise the average through vehicle replacement to exceed California's fuel economy standards. This will also happen as a result of energy efficient vehicle replacement and use.
- Conduct a transportation study and right-size the vehicle fleet by the number and type.
  - Use a Vehicle Allocation Methodology (VAM) to achieve a fleet that is the right size and type. A VAM defines appropriate vehicle type and use for specific tasks.
  - Order right-size vehicles and return underutilized vehicles.
- Develop a vehicle replacement plan to replace aging fleet vehicles.
  - Evaluate AFV options: Hybrid electric vehicles (HEVs), electric vehicles, CNG, and biodiesel.

- Ongoing action: as vehicles come up for replacement, order alternative fuel vehicles.
- Take advantage of DOE benefits and investigate the use of biodiesel and new technologies available in the surrounding area.

#### 4 Vehicle maintenance

- Develop and maintain a fleet maintenance schedule.
  - Keep vehicles in top mechanical condition: rotate tires per manufacturers' recommendations, check tire pressure, don't top off tank, and get regular tune-ups.

### Waste Management

*Emission Reduction Goal: Reduce Park operations waste emissions at each Park to 40 percent below 2008 levels by 2016 through waste diversion and reduction.*

The connection between waste and GHG emissions may not be obvious. However, waste management—in the form of source and solid waste reduction—can dramatically reduce GHG emissions. Landfills are the largest human-generated source of CH<sub>4</sub> emissions in the United States. Waste from John Muir NHS and Eugene O'Neill NHS facilities routinely travels hundreds of miles to the landfill. 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. The less the Park and its visitors consume in terms of products and packaging, the less energy is used and fewer GHGs are emitted.

Park operation activities emitted 4 MTCO<sub>2</sub>E at John Muir NHS and 9 MTCO<sub>2</sub>E at Eugene O'Neill NHS from waste management in 2008. Diverting or reducing the Parks' waste stream through increased recycling efforts and waste management will reduce the amount of waste sent to landfills and resulting emissions. Presented below are the actions that are currently under way and which comprise the Parks' progress to date as well as those actions that the Parks will pursue.

#### Progress to Date

- Assigned one full time staff member to serve as the collateral duty Park Recycling Manager. Infusing responsibilities into performance standards, monitor, track, assess and continually improve Parks' recycling program and activities.
- Engaging Park staff and visitors in composting and recycling programs by encouraging proper disposal of waste.



### Waste Management - Planned

#### Actions

## 1 Decrease waste through behavior change

- Evaluate current purchases and reduce redundant products.
- Train Park staff and contractors on waste reduction responsibilities.
  - Ensure that staff and contractors are aware of their roles and responsibilities to reduce waste. Conduct periodic trainings to inform maintenance crews about recycling and composting policies at the Park.
  - Require an annual training on waste reduction and green procurement.
  - Make reusable and recyclable materials available for staff to use (e.g. plates, cups, silverware, etc.).
  - Integrate metrics on these responsibilities into performance evaluations.
  - Institute paperless office practices: establish standards for double-sided printing and copying, office supply reuse, electronic correspondence procedures, electronic file storage, elimination of colored paper, etc.
- Require that construction contractors reuse or recycle materials used during building renovations and new site construction/remodeling projects.

## 2 Establish new plans and policies that promote waste reduction

- Reduce purchasing through reuse.
- Develop a Green Procurement Plan
  - To ensure the purchasing decisions follow EPA's Comprehensive Procurement Guidelines (CPG).
  - Use the Pacific West Region (PWR) or Washington Office (WASO) model plan addressing preference for purchasing CPG and biobased products. Use Recommended Materials Advisory Notice (RMAN) for the percent recovered content required.
  - Manage new procurement by requiring purchase of products made of recycled materials or with reduced packaging and other "green" practices.
  - Recycled content products include bathroom tissue, paper towels, and plastic trash bags.
- Incorporate Waste reduction into Green Office Practices.
  - Reduce purchases where possible and avoid duplicate purchases.
  - Purchase CPG office supplies with maximum recycled content, avoid PVC (Polyvinyl Chloride) supplies.
  - Purchase durable, reusable supplies, always print double sided, reuse office supplies when possible.
- Reduce waste generated at meetings and employee functions.
  - Establish guidelines for waste minimization: use durable, reusable utensils and mugs, buy in bulk, use items with reduced packaging, and provide recycling receptacles.
- Manage solid waste with an Integrated Solid Waste Management Program (ISWAP).
- Communicate Park waste policy or ISWAP to staff.

- Create an orientation packet and provide information on policies and practices for recycling, green procurement, and other aspects of the Park's waste management policy.
- Conduct brown bag lunches and training seminars for all Park personnel on topics related to waste reduction.
- Include information on Park sustainability, green procurement, and recycling policy in new employee orientations.
- Measure, track, and report waste stream data (include landfilled waste and recycled waste) to monitor reductions and success in diverting waste from the landfill.
  - Record waste management data in an Environmental Management System (EMS) plan or a spreadsheet tracking system.

### 3 Implement recycling and composting practices

- Start a comprehensive recycling outreach campaign aimed at Park visitors.
  - Continually increase the amount of waste material that can be recycled.
- Recycle or donate old computers and electronics.
  - Donate old equipment to schools, senior centers, etc.
  - Practice cradle-to-grave recycling to ensure toxic components are properly managed. Purchase electronics with less toxic components.
- Implement a Construction Waste Management Plan and Job Site Recycling Policy.
  - Require a Construction Waste Management or Recycling Plan; track quantities of recyclables. Make sure contract language addresses waste plan and recycling. Check on "take-back" policies (e.g., ceiling tiles, cardboard, carpet, and drywall).
  - Reuse construction waste on-site, reuse elsewhere, or sell for recycling materials of value including lumber/wood, drywall, metal, rubble, cardboard, fixtures, hardware, and wiring.
  - Require drywall contractors to recycle waste.
  - Work with haulers to prevent contamination of waste sorting. Ensure no illegal dumping occurs off job site.
- Eliminate non-recyclable Styrofoam/Food Serviceware.
  - Use biodegradable cornstarch utensils (Earthshell) and biodegradable foam "peanuts."
  - Styrofoam can be taken in for reuse at UPS Stores, or local businesses that ship items.
- Install easy-to-use recycling containers throughout Park facilities.
- Send used florescent bulbs to reclaim/recycle service center.
- Institute alkaline, lithium battery recycling locations where feasible.

#### 4 Reduce waste through green procurement

- Purchase locally produced products whenever possible, from local vendors and food producers.
- Continually increase the recycled content of purchased materials.
  - Focus on office supplies, gift shop concessionaires, building supplies, furniture and maintenance equipment: hoses, mulch, edging, timbers, posts, and compost with recycled content.
- Train staff on green procurement practices; incorporate into annual staff meetings and new employee orientation.
  - Encourage staff to take OFEE's online green purchasing training.
- Adhere to Federal, NPS, and PWR Guidance for Procurement.
- Use low/no-VOC insulation, carpets, paints, and adhesives.
- Promote the use of recycled content products and materials procurement within the NPS.

#### 5 Reduce and reuse wastewater

- Install low-flow faucets.
- Replace toilets with low-flow models.
- Conserve water used in Grounds Maintenance.
  - Use drought-tolerant grass and native plantings.
  - Mow less grass and grasscycle (leave mowed clippings in place to fertilize).
  - Don't water during the hottest time of day. Don't use fine spray sprinklers. Don't overwater. Maximize permeability of surfaces to allow site to absorb water. Use rain catchment techniques.

## STRATEGY 2: INCREASE CLIMATE CHANGE EDUCATION AND OUTREACH

Climate change is a complex and easily misunderstood issue. John Muir NHS and Eugene O'Neill NHS can play an integral role in communicating about climate change to a vast audience. A better understanding of the challenges and benefits of reducing GHG emissions can motivate staff, visitors, and community members to incorporate climate friendly actions into their own lives. John Muir NHS and Eugene O'Neill NHS recognize that the greatest potential impact the Parks can have on mitigating climate change is through public education. Thus, the Parks see public education as an end goal of any climate initiative. From increasing the efficiency of public transportation to developing a green purchasing program, the actions John Muir NHS and Eugene O'Neill NHS take to address climate change serve as opportunities for increasing the public's awareness of climate change. Presented below are actions that are currently under way and which comprise the Parks' progress to date, and those actions that the Parks will pursue.

### Progress to Date

- Continue to connect with community and Park partners on Climate Friendly Park efforts.
  - Building relationships with Friends Groups, local environmental groups, representatives from the local tourism/community business board, representatives from the state environment/energy departments, teachers, representatives from the regional transportation authority, and local university partners.
  - Holding an annual celebration of John Muir and the earth, known as Earth Day Birthday Celebration. This event shows visitors the historical and environmental values of John Muir NHS.



### Park Staff

#### Incorporate climate change into Park staff training, events, and performance plans

Developing a climate change education program for Park staff is vital to increasing awareness about climate change among Park visitors and fostering a sense of collective responsibility among staff to help reduce Park emissions. By incorporating climate change education into staff development programs, John Muir NHS and Eugene O'Neill NHS will enable their staff to demonstrate commitment through leading by example, and providing visitors with the tools and resources they need to reduce GHG emissions in the Parks and in their own communities. The Parks have developed a number of actions to raise awareness among staff. These actions include:

- Keep staff members that are part of the Green Team/Environmental Management Team informed about Climate-related issues
  - Use materials, publications, and tools available from the U.S. Environmental Protection Agency (EPA) and other agencies and organizations to mentor fellow staff about climate change.

- Create a Park Climate Change Policy Memo specific to John Muir and Eugene O'Neill National Historic Sites.
- Hold internal Climate Friendly Park discussions and workshops.
  - Devise new strategies to continually reduce GHG emissions.
  - Distribute resources and tools to staff, and acknowledge success of current strategies, including giving awards to climate leaders.
- Develop intranet pages to inform staff about climate friendly actions.
  - Use internal information technology to encourage staff to achieve GHG emissions reductions at work, and advise them on new ways to reduce personal emissions.
- Incorporate climate change issues into the employee handbook.
  - Include climate materials in employee orientation packets.
- Include the science and impacts of climate change into Park education tools.
  - Incorporate sessions on climate change into new and seasonal staff training.
  - Tailor seasonal staff handbook to include Climate Friendly Parks information.
  - Include Climate Friendly Parks language in Kiosks and other educational materials.
- Develop a brown bag series for Park staff including Park partners and visitors to educate about current climate change science, the Parks' efforts, and what they can do.
- Create visual reminders for Park employees with climate change information and tips on how employees can help reduce emissions.
- Disseminate information about climate friendly actions the Park is taking at conferences, meetings, and regional workshops.

## Visitor Outreach

Understanding climate change and its consequences is essential to initiating individual behavioral change. John Muir NHS and Eugene O'Neill NHS realize that they have a unique opportunity to educate the public in a setting free from many of the distractions of daily life. By using existing materials, developing Park-specific materials, highlighting what the parks are currently doing about climate change, and encouraging visitors to reduce emissions, John Muir NHS and Eugene O'Neill NHS can play an important role in educating the public about climate change.

John Muir NHS and Eugene O'Neill NHS staff recognize the many different audiences that visit the Parks, including recreational and non-recreational Park visitors, "virtual visitors" who visit the parks online, school-aged visitors, local and out of town visitors, local tribes, and external audiences. Reaching these various audiences with climate change information and engaging them in the Parks' efforts requires appropriately focused messaging. The Parks have developed a number of actions to reach these various audiences effectively. These actions include:

- Educate visitors about climate change.
  - Link climate change and National Parks preservation with actions like using mass transit and alternative transportation.

- Incorporate climate change information into existing Park brochures.
  - Create/utilize bilingual brochures that talk about the success of the CFP program in terms of resource and economic savings where appropriate. Include information and illustrations on Do Your Part!
- Create signs promoting Park's efforts to curb emissions.
  - Develop consistent messaging for recycling, idling, and emission reduction posters.
- Educate visitors about their recycling options at the Park and at home.
- Communicate with local communities, Park visitors, and local media about actions they can take to reduce GHG emissions.
  - Encourage internal and external stakeholders to reduce their carbon footprints using tools like Do Your Part!
- Integrate climate change themes and information into interpretive programs and talks.
  - Integrate Climate Friendly Parks program with school programs using educational kits, wayside exhibits, posters, etc.
- Create demonstration projects and exhibits to convey Park sustainability message to visitors.
- Develop a "Do Your Part" program for online visitors.
- Create and distribute previously produced information on climate change and its effects on National Parks in general and John Muir NHS and Eugene O'Neill NHS in particular.

## Local Community Outreach

The gateway communities, agencies, vendors, and volunteers surrounding John Muir NHS and Eugene O'Neill NHS can play a significant role in supporting the Parks' climate change mitigation goals. As such, when appropriate, Park staff will assist local communities with incorporating climate change messages into community events and find partners to promote climate change education at those events, and engage with surrounding agencies to coordinate effective outreach and education efforts. Potential actions include:

- Host climate change education workshops.
  - Focus presentations on climate change priorities and talk about success stories.
- Educate local community about what the Parks are doing to manage waste.
- Expand on existing community event for Earth Day.
- Collaboration with other Bay Area NPS Units on Climate Friendly projects.
- Build CFP relationships by partnering with more community groups.
- Participate in the First Bloom program to promote climate change awareness.

## STRATEGY 3: EVALUATE PROGRESS AND IDENTIFY AREAS FOR IMPROVEMENT

By taking the actions established in strategies 1, and 2 above, John Muir NHS and Eugene O'Neill NHS plan to reduce emissions to the specified goal. Achieving these goals will require an ongoing commitment by the Parks, which may include subsequent emission inventories, additional mitigation actions, and reevaluation of goals. As part of this strategy, John Muir NHS and Eugene O'Neill NHS will:

- Monitor progress with respect to reducing emissions. This will include subsequent emission inventories to evaluate progress toward goals stated in this action plan.
- Develop additional emission mitigation actions beyond those listed in this plan.
- Periodically review and update this plan.
- The Parks will track climate friendly actions through the Environmental Management System.

## CONCLUSION

John Muir NHS and Eugene O'Neill NHS have a unique opportunity to serve as a model for over 30,000 recreational visitors.<sup>4</sup> This report summarizes the operational actions the Parks commit to undertake to address climate change. Specifically, the Parks realize their ability to educate the public and serve as a valuable model for citizens. By seriously addressing GHG emissions within the Parks and sharing its successes with visitors, John Muir NHS and Eugene O'Neill NHS will help mitigate climate change far beyond the Parks' boundaries.

The National Park Service faces an uncertain future due to the possible effects of climate change. However, by seriously addressing climate change impacts and reducing emissions, John Muir NHS and Eugene O'Neill NHS will reduce their contribution to the problem while setting an example for visitors. The strategies presented in this Action Plan present an aggressive first step towards moving John Muir NHS and Eugene O'Neill NHS to the forefront of Climate Friendly Parks.

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<sup>4</sup> John Muir and Eugene O'Neill National Historic Sites: Park Statistics. Available online at: <http://www.nature.nps.gov/stats/viewReport.cfm>

## APPENDIX A: LIST OF WORK GROUP PARTICIPANTS

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