



National Park Service  
U.S. Department of the Interior



CLIMATE *Friendly* PARKS

# Fire Island National Seashore Action Plan

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## FIRE ISLAND NATIONAL SEASHORE BECOMES A CLIMATE FRIENDLY PARK

As a participant in the Climate Friendly Parks program, Fire Island National Seashore belongs to a network of parks that are putting climate friendly behavior at the forefront of sustainability planning in national parks. By conducting an emission inventory, setting an emission reduction target, developing this Action Plan, and committing to educate park staff, visitors, and community members about climate change, Fire Island National Seashore is serving as a model for climate friendly behavior within the park service.

Fire Island National Seashore has committed to reducing greenhouse gas (GHG) emissions from its Park Operations by 20% below 2007 levels by 2015. This Action Plan lays out the measures the park will take to meet this goal. In addition to implementing these measures, Fire Island National Seashore will:

- Perform subsequent emission inventories to monitor progress
- Identify additional actions to reduce GHG emissions and inform the public on climate change
- Include additional actions, and strengthen existing actions, to reduce GHG emissions in future Action Plans

## THE CHALLENGE OF CLIMATE CHANGE

Climate change presents significant risks and challenges to the National Park Service. At Fire Island National Seashore, increased temperatures and sea level rise may alter the natural ecosystems present, and change both the habitats available for species and resources available for park visitor recreation.

Scientists cannot predict with certainty the general severity of climate change nor its impacts. However, the current warming trend suggests that the problem is real and should be taken seriously. 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>1</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.

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<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> >

## GOALS AND OBJECTIVES

The objective of this Action Plan is to identify actions that Fire Island National Seashore can undertake to reduce GHG emissions and thus address climate change. This plan presents the park's emission reduction targets and associated reduction strategies designed to achieve the park's emission reduction goals.

While the plan does not provide detailed instructions on how to carry out each of the proposed measures, it provides the essential framework needed to meet Fire Island National Seashore's emission reduction targets. The plan presents an opportunity for the park to devote resources for climate action through a mandate from the park's superintendent. This mandate gives park staff the resources and authority to pursue the mitigation strategies contained in this plan.

Fire Island National Seashore aims to:

***Reduce GHG emissions from Park Operations to 20% below 2007 levels by the year 2015 by implementing emission mitigation actions identified by the park.***

In order to meet or surpass this goal, the park will implement strategies proposed in this plan that build from the park's current and future emission inventories. Specifically, the plan recommends three main strategies:

**Strategy 1:** Reduce emissions from park facilities and operations by identifying and implementing emission mitigation actions.

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

**Strategy 3:** Evaluate progress and identify areas for improvement.

## GREENHOUSE GAS EMISSION INVENTORY AT FIRE ISLAND NATIONAL SEASHORE

Naturally occurring greenhouse gases 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

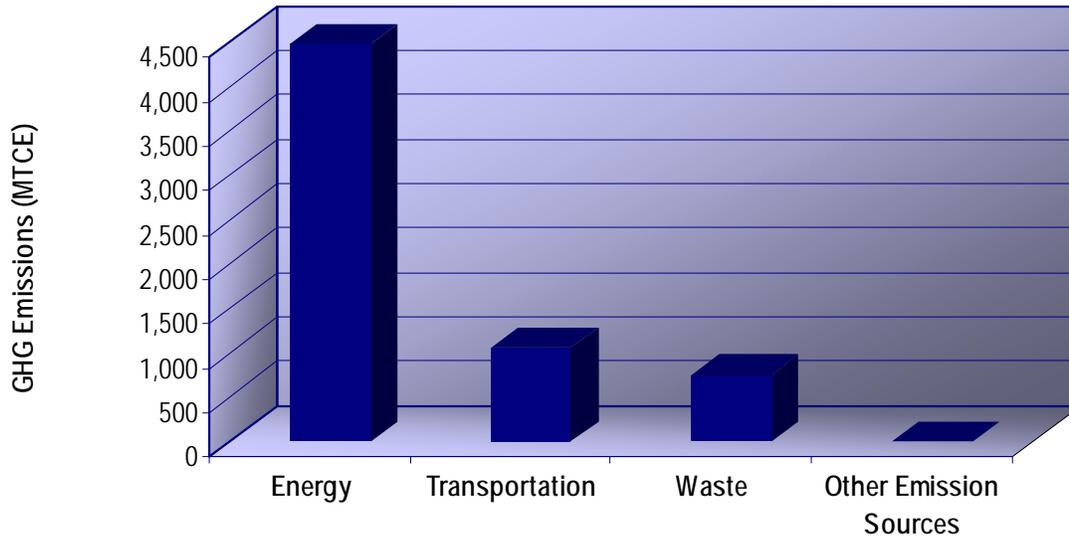
GHG emissions result from the combustion of fossil fuels for energy (e.g., boilers, electricity generation) and transportation purposes, the decomposition of waste and other organic matter, and the volatilization or release of various other sources (e.g., fertilizers and refrigerants).

In 2007, Fire Island National Seashore's GHG emissions totaled 6,290 metric tons of carbon equivalent (MTCE). This total includes emissions calculated from Park Operations, Residents/Visitors, and Concessioner operations. As Figure 1 and Table 1 demonstrate, the largest emission sector for Fire Island National Seashore is Energy - totaling 4,472 MTCE. The majority of these emissions result from the purchase of electricity among the park's visitors, residents, and concessioners. Figure 2 and Table 2 present emission inventory results for Park Operations only (excluding Residents/Visitors and Concessioners). These emissions totaled 170 MTCE, resulting from Energy (41 percent), Transportation (27 percent) and Waste (32 percent) activities.



## FIGURE 1

*Fire Island National Seashore's 2007 Greenhouse Gas Emissions by Sector*



## TABLE 1

*Fire Island National Seashore's 2007 Greenhouse Gas Emissions by Sector and Source*

	Emissions (MTCE)	% of Total
<b>Energy</b>	<b>4,472</b>	<b>71.1%</b>
Stationary Combustion	1,300	20.7%
Purchased Electricity	3,172	50.4%
<b>Transportation</b>	<b>1,065</b>	<b>16.9%</b>
Mobile Combustion	1,065	16.9%
<b>Waste</b>	<b>754</b>	<b>12.0%</b>
Solid Waste Disposal	754	12.0%
<b>Other Emission Sources</b>	<b>0</b>	<b>0.0%</b>
<b>Total Emissions</b>	<b>6,290</b>	



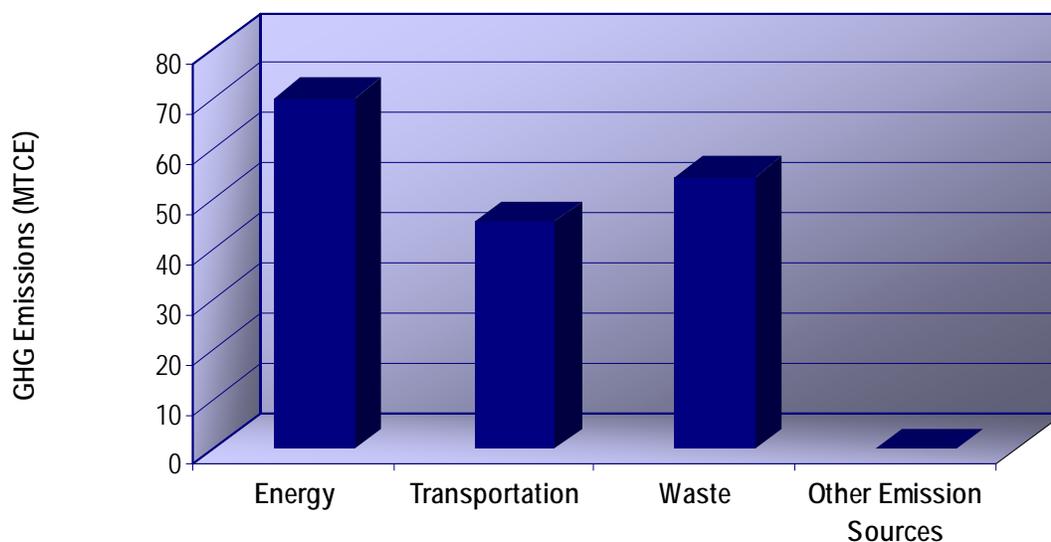
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## FIGURE 2

*Fire Island National Seashore's 2007 Park Operations Greenhouse Gas Emissions by Sector*



## TABLE 2

*Fire Island National Seashore's 2007 Park Operations Greenhouse Gas Emissions by Sector and Source*

	Emissions (MTCE)	% of Total
<b>Energy</b>	<b>70</b>	<b>41.2%</b>
Stationary Combustion	26	15.5%
Purchased Electricity	44	25.7%
<b>Transportation</b>	<b>45</b>	<b>26.7%</b>
Mobile Combustion	45	26.7%
<b>Waste</b>	<b>54</b>	<b>32.0%</b>
Solid Waste Disposal	54	32.0%
<b>Other Emission Sources</b>	<b>0</b>	<b>0.0%</b>
<b>Total Emissions</b>	<b>170</b>	



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# How Fire Island National Seashore is Responding to Climate Change

*The following actions were developed during the CFP workshop hosted by Fire Island National Seashore on July 9<sup>th</sup> and 10<sup>th</sup>, 2008 in order to meet the park's climate change mitigation goals.*

The strategies and actions presented below specifically demonstrate how Fire Island National Seashore plans to affect climate change based on the results of the park's GHG emission inventory. Fire Island National Seashore is in the unique situation of having 17 vibrant communities within park boundaries that accommodate residents, visitors, and concessioners. The park has chosen to include these communities in the emission inventory and is committed to engaging them in activities to learn about and reduce emissions. Therefore the strategies and actions listed below address these communities. In the interest of preparing focused emission reduction goals, the park has specifically targeted its Park Operation emissions for goal-setting purposes.

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

### Energy Use Management

*Emission Reduction Goal: Reduce Park Operations energy use emissions to 30% below 2007 levels by 2015.*

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 park. As the inventory results indicate, 41.2 percent of the park's GHG emissions from Park Operations result from energy consumption. Consequently, Fire Island National Seashore will take the following actions to reduce energy-related emissions. The following strategies were developed to meet the park's energy use emission reduction goal:

#### 1 Install energy efficient light fixtures and light-controlling devices

- Within the next 5 years replace all 125 T12's to T8's.
- Replace remaining 200 incandescent 60 - 75 light bulbs with CFL's.
- Install occupancy sensors, insulation (windows, walls, and ceiling), and programmable thermostats in all rooms as needed in all buildings.

#### 2 Promote energy efficiency and energy conservation in NPS-owned facilities

- Establish a park-wide policy in sustainable design using the Leadership in Energy and Environmental Design (LEED) Green Building Rating System.
- Replace Boiler at Lighthouse Annex Facility and re-evaluate year round use for parts of the building.
- Turn down thermostats in winter and up in summer without sacrificing building comfort.
- Upgrade HVAC to more energy efficient units.
- Purchase Energy Star appliances, and investigate opportunities for decreasing the amount of time that office equipment is operating. Potentially incorporate Federal Electronics Challenge.
- Obtain LEED Gold Certification upon development of new FIIS NS's Headquarters.



### 3 Produce clean energy or purchase electricity from a renewable energy provider

- Consider mandate for installing solar shingles and/or placing a solar demonstration exhibit in each of the 3 visitor centers and/or educational exhibits.
- Conduct a feasibility study for a high profile solar demonstration project at the lighthouse. Investigate opportunities to have LIPA subsidize the project.
- Convert ferry terminal parking lot lights to solar or replace them with solar lights.
- Install solar panels on south-side of 10% of park island buildings.
- Investigate the possibility of using solar power across the island.
- Investigate with concessioner a marina demonstration project (eco-slips) for hooking boats up to solar power while docked.

### 4 Other

- Prepare a park energy audit to determine opportunities for improving energy efficiencies, etc.
- Consider reducing electricity use at E dock. Make small changes to reduce electricity consumption at docks.
- Incorporate energy-efficiency criteria into new contracts for park and concessionaire construction. Modify concessioner contractual language to include sustainable practice requirements.
- Investigate the possibility of 4 x 10 hour days in the off-season, which will allow for shutting down buildings for longer periods.
- Conduct energy consumption survey of communities to improve upon energy consumption estimates used in the baseline inventory.

## Transportation Management

*Emission Reduction Goal: Reduce Park Operations transportation emissions to 17 % below 2007 levels by 2015.*

Reducing vehicle miles traveled, improving vehicle efficiency and using alternative fuels can significantly reduce Fire Island National Seashore's emissions. As the inventory results indicate, 26.7 percent of the park's GHG emissions from Park Operations are a result of mobile combustion. The following strategies were developed to meet the park's transportation emission reduction goal:

### 1 Reduce fuel consumption by NPS, concession, and visitor vehicles

- Institute a no-idling policy for park vehicles.
- Purchase fuel efficient vehicles when updating fleet.
- Increase use of ATV's and Polaris vehicles on beach instead of using SUV's.



- Work "Economy of Motion" into all park travel by consolidating the number of trips for vehicles, equipment, and watercraft. Conserve fuel through proper operation.
- Limit contractors' access throughout island; encourage workers to use ferry to return to long island.
- Investigate contractor carpooling/park & ride program and encourage workers to carpool to ferry location.
- Increase efficiency of commercial businesses that are transporting items to the island.
- Long term: Investigate opportunities to coordinate shuttle bus with state park.
- Work with ferry system to address scheduling issues to accommodate work-days in future regulations and conduct feasibility study to determine best ferry route options.
- Explore options for alternative transportation on island (e.g., bicycles). Encourage Robert Moses bike trail.
- Investigate more fuel-efficient motor and hull types for park watercraft and replace when necessary.

## 2 Use alternative fuels and oils in vehicles, watercraft, and equipment

- Investigate the possibility of using synthetic oils.
- Investigate options for converting diesel equipment to biodiesel.
- Encourage concessioners to include biodiesel in their operations.
- Encourage use of biodiesel among ferries and examine opportunities for subsidizing biodiesel contributions from local business.

## 3 Other

- Endorse community infrastructure development and support dock/pier plan for commercial use and access.
- Finalize visitor boating study conducted by Prizim Inc. during the Clean Marinas/Climate Friendly Parks Workshop.

## Waste Management

*Emission Reduction Goal: Reduce Park Operations waste emissions to 10% below 2007 levels by 2015 through waste diversion and reduction.*

The connection between waste and GHG emissions may not be obvious. However, waste management—in the form of source reduction and solid waste reduction—can dramatically reduce GHG emissions. The less we consume in terms of products and packaging, the less energy is used and fewer GHGs are emitted. Additionally, reducing the amount of waste sent to landfills reduces CH<sub>4</sub> emissions caused by decomposition.

Diverting or reducing the park's waste stream through increased recycling efforts and waste management procedures will reduce the amount of waste sent to landfills, which are the largest human-generated source of CH<sub>4</sub> emissions in the United States. Fire Island National Seashore's Park Operation activities emitted 54 MTCE from waste management in 2007. The following strategies were developed to meet the park's waste emission reduction goal:



## 1 Manage waste through source reduction, composting, recycling, and combustion

- Research more options for disposal and possible recycling of treated lumber, and scrap from plastic lumber.
- Develop a comprehensive recycling plan.
- Coordinate procurement practices so that surplus materials within the federal government may be used by other parts within the government.
- Encourage off-road vehicle process and permitted carters that recycling is properly handled (not landfilled). Require hauler that picks up trash on island ensures that it is properly handled.
- Increase size of waste containers to reduce number of trips to deliver recyclables.
- Manage solid waste through the implementation of an Integrated Solid Waste Alternative Program (ISWAP) plan.

## 2 Other

- Investigate opportunities to partner with someone to subsidize purchase of shredders, compactors, etc.
- Investigate and develop low-impact seasonal eco-camping opportunities.
- Include climate-friendly discussion in concessioner meetings with Green Team; conduct a field trip to Liberty Island to learn best practices.

# STRATEGY 2: INCREASE CLIMATE CHANGE EDUCATION AND OUTREACH

Climate change is a complex issue that the park can help communicate to the public. A better understanding of the problem and the benefits of reducing GHG emissions can motivate staff, visitors, and community members to incorporate climate friendly actions into their own lives. Fire Island National Seashore recognizes that the greatest potential impact the park can have on mitigating climate change is through public education. Thus, the park sees 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 Fire Island National Seashore takes to address climate change serve as opportunities for increasing the public's awareness of climate change.

## Park Staff

Developing a climate change education program for park staff is vital to increasing awareness about climate change among park visitors. By incorporating climate change education into staff-development programs and creating new opportunities for staff to learn about climate change, Fire Island National Seashore will reduce park emissions and provide visitors with the tools and resources they need to reduce GHG emissions at home and in their own communities.

### **Incorporate climate change into park staff training and performance plans**

In an effort to provide Fire Island National Seashore staff with the knowledge and tools to educate visitors, the park will:

- Incorporate climate change concerns into checklist for environmental review of new projects.



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- Incorporate climate change into annual staff training requirements.

## Visitors

Understanding climate change and its consequences is essential to initiating individual behavioral change. Fire Island National Seashore realizes that it has 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 park is currently doing about climate change, and encouraging visitors to reduce emissions, Fire Island National Seashore can play an important role in educating the public about climate change.

### Incorporate climate change awareness into visitor education

Park interpretive staff have the opportunity to introduce the issue of climate change to many visitors. Fire Island National Seashore encourages staff to include messages about climate change in their visitor talks. The park will:

- Investigate developing “Eco-Events” that reach out to and involve visitors, school groups, partners and allies, communities, and park employees.
- Create educational programs about FIIS and climate change to be displayed on ferries or ferry terminals.
- Develop a new Eco Visitor Center to reach visitors, school groups, partners and allies, communities, and park employees.
- Use Student Conservation Association interns to help educate the public.
- Make use of marinas as educational sites to promote more efficient use of motor boats.

### Develop park-specific interpretive materials for visitors

Educating visitors about the tangible effects of climate change is a powerful way to encourage visitors to reduce GHG emissions. The park will use existing climate change interpretive resources, and promote the development of climate change materials specific to impacts in Fire Island National Seashore. The park will:

- Include educational signs with every sustainability project.
- Educate visitors/residents about their recycling options in the park and at home.
- Include information on climate-friendly actions in the park and the CFP program in the Fire Island NS brochure to reach visitors, school groups, partners and allies, communities, and park employees.

### Highlight what the park is doing to address climate change

Fire Island National Seashore has already taken many climate friendly actions. In an effort to lead by example and demonstrate climate friendly behavior for the public, the park will increase education and outreach efforts related to sharing the successes it has already achieved. The park will:

- Disseminate Press Releases after becoming a Climate Friendly Park to reach visitors, school groups, partners and allies, communities, and park employees.
- Make better use of more subtle forms of advertising/messaging in places like TV, the backs of tickets, on concessioner cups, etc., to reach visitors, partners and allies.

The Do Your Part! program provides easy actions people can take every month to reduce emissions in their everyday lives.

### Encourage visitors to reduce greenhouse gas emissions



Perhaps the greatest potential for Fire Island National Seashore to help reduce GHGs is to increase visitors' awareness of how they can reduce their personal GHG emissions. The park will:

- Institute the Do Your Part! Program to reach visitors, school groups, partners and allies, communities, and park employees.

## Local Community

The communities within and surrounding Fire Island National Seashore can play a significant role in supporting the parks GHG reduction goals. As such, when appropriate, Fire Island National Seashore staff will assist local communities with incorporating climate change messages into community events and find partners to promote climate change education at those events. Park staff will use their knowledge of climate change resources to help local communities engage in climate friendly actions.

### **Encourage climate change awareness among the communities within both the park and region**

Fire Island National Seashore realizes that the communities within the park and the region are one of the greatest assets in addressing climate change on Fire Island. The park will:

- Foster competitive spirit between communities, park, etc., to become climate friendly through the use of Do Your Part! and other outreach methods.
- Use connections to profile eco-friendly actions residents have already taken and use these connections to form committee.
- Make use of EPA Toolkits and Educational standards to reach school kids on Fire Island.
- Connect with Friends of Watch Hill to do demonstration pieces on solar-powered boats.
- Create consistent messaging about climate change across all entities on Fire Island.
- Attend Fire Island Association meeting. Announce desire to build a climate-friendly meeting group with residents.
- Encourage communities to incorporate LEED certification standards into zoning and include LEED existing building standards.
- Address resident use of energy efficient technologies and encourage energy conservation.
- Develop a steering committee for communicating with residents about renewable energy opportunities. Include residents that are currently working with LIPA on net metering opportunities.
- Work with NPCA/Stony Brook/Brookhaven Lab/LIPA to have a renewable options show/conference; (hold at Field Five at Robert Moses); potentially partner with the state.
- Add climate change information to the Travelling Trunk program to reach school groups, partners and allies, and communities.
- Demonstrate to children in schools how to properly dispose of waste and the value of reducing, reusing and recycling – e.g. Gateway Lunchroom Demonstration.
- Interact with Partners and Allies, who may include: FIA, contractors, Fire Island Year-Round Residents Association, Coast Guard Aux., Boaters' Associations, State and Local Parks, and NGO's.



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

By taking the actions established in strategies 1 and 2 above, Fire Island National Seashore plans to reduce its emissions to the specified goal. Achieving this goal will require an ongoing commitment by the park, which may include subsequent emission inventories, additional mitigation actions, and reevaluation of goals.

- Perform subsequent emission inventories to evaluate progress toward goals stated in this action plan.
- Develop additional emission mitigation actions beyond those listed in this plan.
- Form a committee to meet periodically to review progress on this plan.

## CONCLUSION

Fire Island National Seashore has a unique opportunity to serve as a model for approximately 2.2 million visitors annually.<sup>2</sup> This report summarizes the operational actions the park commits to undertake to address climate change. Specifically, the park realizes its ability to educate the public and serve as a valuable model for citizens. By seriously addressing GHG emissions within the park and sharing its successes with visitors, Fire Island National Seashore will help mitigate climate change far beyond the park's boundaries.

This Action Plan also serves as an important enhancement mechanism for the Park's Environmental Management System (EMS). Realistic environmental commitments created by Fire Island National Seashore staff and approved by the park's superintendent will significantly reduce the park's GHG emissions in the coming years. The mitigation actions included in this plan have been developed in order to be directly transferable to the park's EMS Fire Island National Seashore's Action Plan thus provides an effective way to meet EMS goals.

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, Fire Island National Seashore will reduce its contribution to the problem while setting an example for its visitors. The strategies presented in this Action Plan present an aggressive first step towards moving Fire Island National Seashore to the forefront of Climate Friendly Parks.

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<sup>2</sup> Fire Island National Seashore: Park Statistics. Available online at: <http://www.nps.gov/fiis/parkmgmt/statistics.htm>.