• **Goal:** Improve the energy conservation and efficiency of the Gulf of the Farallones National Marine Sanctuary Crissy Field Headquarters

• **Via:** Green Operations chapter of the GFNMS Ocean Climate Initiative Action Plan (Action Plan)

• **Recommendations from Aug 09 SAC Meeting:**
  - Adopt and implement Action Plan at GFNMS
  - Distribute plan to all sanctuaries
  - Present status of Action Plan each year
  - Present emissions inventory each year
Accomplishments 2009

- Working Group formed to draft Green Operations Plan
- Partnered with Park to complete 2008 inventory of Greenhouse Gas (GHG) emissions (baseline).
- SAC approved plan and requested that it be adopted by site, and forwarded to every national sanctuary
- Site adopted the plan
- Stellwagen Bank Sanctuary completes emissions audit
- Green Team began to implement plan
Accomplishments 2010

- Climate Change Impacts Report released to public
- Green Operations Plan sent to HQ for review
- Green Operations Plan distributed nationally
- Thunder and Fagatele Bay Sanctuaries inquire about plan
- West Coast Region Ocean Acidification Team adopts several operations strategies
- 2009 Emissions Inventory completed
Action Plan Summary

- Tracked status of all 136 actions
- Each category has a measurable reduction target, specific actions, evaluation metrics, and potential partners.
- Used emissions inventory to determine if reduction targets were met.
2009 Emissions Inventory

- Measured energy (natural gas and electricity), transportation, wastewater, and solid waste
- Park Service CLIP Tool
- Derived per capita estimate
2009 Emissions by Category
Gulf of the Farallones National Marine Sanctuary

- Energy: Natural Gas: 11%
- Energy: Electricity: 12%
- Transportation: 75%
- Wastewater: 1%
- Waste: 1%
Energy Efficiency

39 ACTIONS

Challenges- EPEAT, windows
Successes- light sensors, Energy Star

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<td>20%</td>
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<tr>
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<td>8%</td>
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TARGET: 3% annually or 30% by 2020.

RESULTS: 7% (4% new building) (23% of total emissions)
Transportation Management

27 ACTIONS
Challenges- incentive programs, biodeisel
Successes- flexible schedules, telecommuting

TARGET: Emissions 5% annually or 50% by 2020.

RESULTS: TOTAL 16% (75% of emissions)

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Car/Boat 0%
Plane 42%
Bus 50%
Water Management

20 Actions

Challenges- sprinklers, grey water
Successes- faucet in kitchen, toilets

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<td>40%</td>
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TARGET: ↓ 2% per yr or 20% by 2020.
RESULT: ↓ 10%  (1% of emissions)
**Waste Management**

**41 ACTIONS**

**Challenges** - vendors, shipping

**Successes** - recycling center, purchases

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**TARGET:** 95% by 2015 and 100% by 2020.

**RESULT:** 50%
Education & Outreach

9 Actions

Challenges - tours, trainings
Successes - signs

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**TARGET:** A measurable increase in environmental education and outreach specific to climate change.

**RESULT:** 6 of 9 actions addressed
### Action Plan Summary Results

**Total - 136 Actions**

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<tr>
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<td>4%</td>
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Made progress on over 80% of actions!
Per Capita Emissions Inventory Results

Metric Tons Carbon Dioxide Equivalent (MTCO₂E)

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<tr>
<th></th>
<th>Energy: Natural Gas</th>
<th>Energy: Electricity</th>
<th>Transportation</th>
<th>Wastewater</th>
<th>Waste</th>
<th>Gross Emissions</th>
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<td>2008</td>
<td>20</td>
<td>18</td>
<td>149</td>
<td>1</td>
<td>2</td>
<td>190</td>
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<tr>
<td>2009</td>
<td>21</td>
<td>19</td>
<td>128</td>
<td>1</td>
<td>1</td>
<td>171</td>
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Per Capita Emissions

- 190 metric tons / 23 staff = 8.26 MTCO₂E (2008)
- 171 metric tons / 23 staff = 7.43 MTCO₂E (2009)
- REDUCED 0.83 MTCO₂E per capita
Discussion

- Staff remained level
- Met all targets except Energy Efficiency
- Additional building included in inventory (Residence/Officer in Charge Quarters)
- Emissions will rise with Residence occupancy in Oct 2010
- Value in completing each action (e.g. composting, recycling electronics)
- Challenging to correlate individual actions to reduction targets
More Information

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GFNMS Crissy Field Campus Update

Background

• NPS Permit/MOA for all buildings of Ft Point Lifeboat Station
• Icon for Marine Stewardship
• HQ $ ~ $3M investment
• LEED Gold
FY10
• Residence occupancy Sep 2010
• Exhibit concept plan

FY11
• Utilities upgrade
• Lifeboat Station 100% design (options for Boathouse & exhibit design)
• Renew ONMS MOA with NPS
• Funding dependent, next rehabilitation project
Carbon Dioxide Equivalent (CO2e):

The universal metric unit of measurement used to indicate the global warming potential of each of the six greenhouse gases. Carbon dioxide, a naturally occurring gas that is a byproduct of burning fossil fuels and biomass as well as land-use changes and other industrial processes, is the reference gas against which the other greenhouse gases are measured.
Transportation: Breakdown of Emissions (2009)

- Car: 53%
- Boat: 32%
- Bus: 9%
- Plane: 6%