Manhattan Beach: Working Towards a Sustainable Community

Climate Action Plan

April 20, 2010

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Executive Summary

Key Highlights and Findings

- The City's target municipal emissions goal is 4,381 metric tons of CO2e; this represents a 17.5% reduction from current emissions levels.
- The City decreased GHG emissions 6.2% between 2005 and 2007. This was largely due to alternative fuel sources from contract vehicles.
- Initial 2009 results show a 2.5% increase in GHG emissions; if we continue with business-as usual, there will be an estimated 0.6% increase in GHG emissions each year until 2020.
- If no action is taken to reduce emissions, the City can expect emissions to rise to 5,459 MT of CO2e by 2012; that is equivalent to annual GHG emissions from 1,044 passenger vehicles.
- The City can begin implementing projects that will reduce energy costs, as well as our carbon footprint, while having long-term beneficial impacts on the community.

The City Council recognized the dangers associated with climate change, and decided to take action by endorsing the U.S. Mayors Climate Protection Agreement in 2007. At the time Manhattan Beach was only of only 300 cities to make the commitment to reduce municipal greenhouse gas (GHG) emissions to at least seven percent below 1990 levels by 2012. Now there are over 1,000 municipalities that have signed on to the goal to reduce their carbon footprints. In November 2007 the City published a comprehensive assessment of its environmental programs, including a GHG emissions inventory, in the Green Report. This publication identified the City's baseline emissions, as well as quantified the emissions reduction goal the City is striving towards.[1]

The City has taken steps towards reducing its impact on the climate by implementing various energy efficiency measures, such as replacing several existing traffic signals with LED lighting, replacing existing vehicles with low-emission vehicles where feasible, adopting a Sustainable Building Ordinance and a Green Purchasing Plan, and conducting a Level III energy audit to identify how best to make our buildings and facilities more energy efficient. These actions show the community that the City can be a leader in energy efficiency and emissions reductions. While these actions have had an impact on the City's GHG emissions, in order to reduce our carbon footprint to the level needed to meet the U.S. Mayors Climate Protection goal the City will need to enact several greenhouse gas reduction measures.

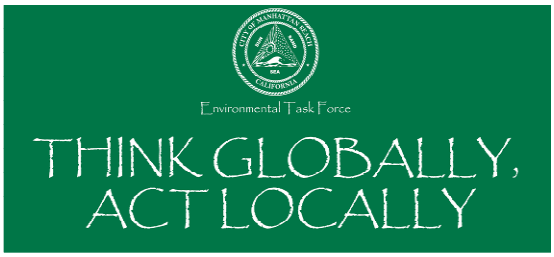
City staff and the Environmental Task Force have collaborated to develop a Climate Action Plan that outlines some of the measures the City can implement to reduce its carbon footprint. By encapsulating these measures and proposed ideas into a Climate Action Plan, the City is adopting a roadmap to assist in meeting its climate protection goals, and reduce its impact on the environment.

[1] Once the data is finalized for the City's 2009 energy consumption, staff will be able to verify the City's current emissions levels, as well as analyze its community-wide emissions inventory.

Introduction to Manhattan Beach, Climate Change, and Climate Action

Manhattan Beach, a Green City

Manhattan Beach, a thriving 3.88 square mile coastal community, has a long history of environmental sensitivity and activism as a community, and as a city government. The City Council has made sustainability a priority goal, and over half of the Council's Work Plan relates to environmental issues. In 2007, the City developed the "Working Toward A Greater, Greener Manhattan Beach" report (Green Report) as a first step to creating an environmental plan for the City. This report documents current environmentally friendly practices and identifies other best management practices that the City can consider adopting to enhance our environmental programs. Two important actions taken as a result of this report are the hiring of an Environmental Programs Manager to coordinate the City's green policies, and the creation of a resident-based Environmental Task Force to analyze priority environmental issues and make recommendations to City Council. The work of the Task Force, Environmental Programs Manager, and related Department Staff has resulted in the recent passage of several far-reaching environmental policies and programs, including: a Water Conservation Ordinance, a Sustainable Building Ordinance, a Green Purchasing Plan, and ideas to develop a Waste Reduction Plan as well as this municipal Climate Action Plan.



Background on Climate Change

Historically, Earth's atmosphere contained 275 parts per million of carbon dioxide.[2] About 200 years ago humans began to burn coal, gas and oil to produce energy, causing the amount of carbon in the atmosphere to rise. Many of the activities we do every day like turning the lights on, cooking food, or heating or cooling our homes rely on energy sources like coal and oil that emit carbon dioxide and other heat-trapping gases into the atmosphere. This has lead to millions of years worth of carbon, stored beneath the earth as fossil fuels, being releasing into the atmosphere. Now the planet has nearly 390 parts per million CO2, and this is rising by about 2 parts per million every year. Scientists tell us this amount of CO2 is higher than any time seen in the recorded history of our planet, and that it is too much. We are already beginning to see disastrous impacts on people and places all over the world due to this increase in CO2.

Glaciers everywhere are melting and disappearing fast—and they are a source of drinking water for hundreds of millions of people. Sea levels have begun to rise, and scientists warn that they could go up as much as several meters this century. If that happens, many of the world's cities, island nations, and farmland will be underwater. The oceans are growing more acidic because of

[2] Parts per million is simply a way of measuring the concentration of different gases, and means the ratio of the number of carbon dioxide molecules to all of the molecules in the atmosphere. Without some CO2 and other greenhouse gases that trap heat in our atmosphere, our planet would be too cold for humans to inhabit.

the CO2 they are absorbing, which makes it harder for animals like corals and clams to build and maintain their shells and skeletons.

Due to these impacts of climate change, leading climate scientists now recognize 350 parts per million as the highest safe level of CO2 in the atmosphere. As James Hansen of NASA, the first scientist to warn about climate change wrote, "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted…CO2 will need to be reduced from its current 385 ppm to at most 350 ppm."

To achieve this goal we need to stop burning so much coal, and start using renewable sources like solar and wind energy. If we do this, then the Earth's soils and forests will slowly cycle some of that extra carbon out of the atmosphere, and eventually CO2 concentrations will return to a safe level.[3]

Manhattan Beach Climate Action

Being a small coastal community, Manhattan Beach has an innate reason to be concerned about climate change. The dangers associated with sea level rise and ocean acidification threaten our beaches, marine life, and recreational uses of our prized natural resource—the ocean. Manhattan Beach has recognized these hazards, and is committed to taking action to reduce its impacts on climate change.

In the Fall of 2006, several local residents approached the City Council asking that they consider endorsing the United States Mayors Climate Protection Agreement, which focuses on climate change and the need for all cities to reduce greenhouse gas emissions.

In January 2007 the City Council adopted a resolution endorsing the Agreement. Although this resolution focuses solely on greenhouse gas emissions, it was the catalyst for comprehensively evaluating the City's environmental programs, policies and goals. Following this directive, the City of Manhattan Beach committed to reducing greenhouse gas emissions at least 7% below 1990 levels through the development of a municipal Climate Action Plan.

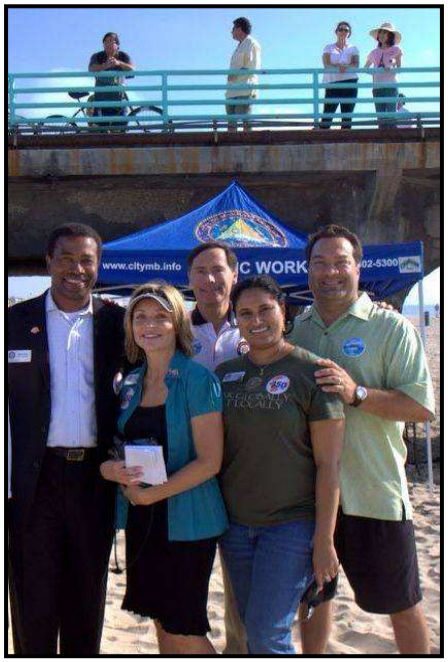
[3] More information on climate change background, the 350 parts per million target, and impacts of climate change can be found at www.350.org and www.epa.gov/climatechange.

The City's Green Report outlines our baseline emissions inventory, the largest sources of municipal emissions, and emissions trends. The City Council formed the resident-based Environmental Task Force to recommend measures to reduce greenhouse gas emissions, as well as review several other environmental issues. The Task Force played a key role in public outreach and education on climate change issues, including the City's successful participation in the International Day of Climate Action organized by the 350 organization. Task Force members and City staff volunteered their time and talents to educating the public on climate change, the importance of energy efficiency, and encouraged participation in the 350 climate action event. The event was one of the largest nationwide, with over 1,300 individuals lining up next to the historic Manhattan Beach Pier to make a global statement on climate action.

The Task Force completed its first 18-month term with several recommendations that will reduce the City's impact on climate change. However, the City still needs to take action on these recommendations, as well as develop programs to help reduce greenhouse gas emissions community-wide. Preparing this municipal Climate Action Plan is the first step in meeting our climate commitments and paving the way to reducing the City's impact on climate change.

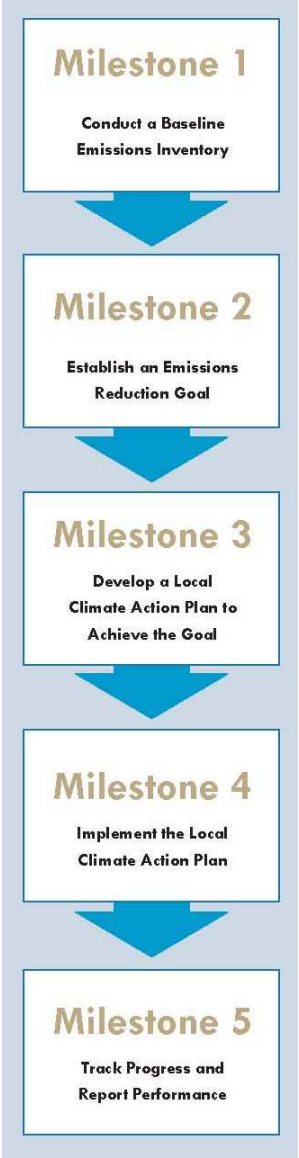
City Leadership at 350 Day of Climate Action:

Mayor Mitch Ward, Councilwoman Portia P. Cohen, Councilman Wayne Powell, Environmental Programs Manager Sona Kalapura, and Mayor Pro Tem Richard Montgomery



Emissions Profile

One of the critical first steps to reducing the City's contribution to climate change is to calculate the emissions generated from government operations and our community; this is also known as determining our City's emissions footprint. To assist in achieving our climate action commitment, the City joined ICLEI (known as Local Governments for Sustainability) and utilized their assistance with the Clean Air and Climate Protection Software, as well as ICLEI's five-step methodology to reducing greenhouse gas emissions. The five milestones (shown at right) provide a standardized framework for communities to take an emission inventory, set an emissions reduction goal, develop a Local Climate Action Plan to achieve that goal, take steps to implement the Plan, and lastly to monitor progress.



The City decided to begin its climate action efforts through the development of a municipal climate action plan. The year 2005 was chosen as the baseline year to maintain consistency with other local jurisdictions which have already completed an emissions inventory as well as to allow for like comparison. We also used historical data to estimate the City's greenhouse gas emissions released in 1990 to help us to determine our future emissions reduction goal. In line with the Kyoto Protocol, our goal is to achieve a 7% reduction below the City's 1990 emissions level.

Table 1: Summary of GHG Emissions and Emissions Reduction Goal

GHG Emissions Reduction Goal	Actual Emissions (in Metric Tonnes)
1990 Emissions	4,711
2005 Emissions	5,517
2007 Emissions	5,172
2009 Emissions (estimate)	5,306
Goal: 7% below 1990 levels	**4,381**
Reduction needed from estimated 2009 Emissions Level = 925 MT	**Approximately 17.5%**

Greenhouse Gas Inventory

The City has seen some emissions reductions based upon the environmental practices it has already implemented—an approximate 6% decrease in its GHG emissions from 2005 to 2007. Some examples of actions the City has taken to reduce GHG emissions include the purchase of more fuel efficient vehicles, as well as the use of contract service providers, such as Waste Management, that utilize low-emission fuels. Though the initial results are promising, Table 1 shows that the City may see a 2.5% increase in its estimated 2009 emissions. In order to meet the goals outlined in the U.S. Mayors Agreement, the City will need to reduce municipal GHG emissions by approximately 17.5% of its estimated 2009 emissions (which is the equivalent of removing 177 passenger vehicles off the road annually).

To calculate the GHG emissions inventory, the City gathered information from a variety of sources, including consumption data from utility companies, fuel data from internal city records, and data on waste and other services from contract service providers. A characterization study from the California Integrated Waste Management Board was utilized to capture waste composition, and employee commute surveys were administered to capture emissions data from vehicle miles traveled, where no records were available. This data was then utilized to quantify GHG emissions. The results of the City's municipal GHG inventory show that most emissions come from City Operated Facilities, Vehicle Fleet, and Employee Commute, shown in Table 2 below.

Table 2: 2005 and 2007 GHG Emissions Inventory for Manhattan Beach*

2005 Emissions Data	% of Total 2005 Emissions	CO2 Emissions (in metric tonnes)	2007 Emissions Data	% of Total 2007 Emissions	CO2 Emissions (in metric tonnes)
City Operated Facilities & Parks	15%	805	City Operated Facilities & Parks	25%	1,278
Vehicle Fleet Fuel Usage	46%	2,520	Vehicle Fleet Fuel Usage	35%	1,788
Employee Commute	15%	841	Employee Commute	16%	843
Water/Sewage Pump Stations	11%	584	Water/Sewage Pump Stations	9%	454
Streetlights & Traffic Signals	13%	736	Streetlights & Traffic Signals	15%	774
Waste (**negligible)	1%	31	Waste (**negligible)	1%	35
2005 TOTAL:	**100%**	**5,517**	**2007 TOTAL:**	**100%**	**5,172**

*Analyst Note: Emission inventory was calculated using ICLEI's Local Governments for Sustainability CACP Software

The inventory results should be thought of as an approximation of the GHG emissions emitted in the years inventoried. And the results should be used as a policy and planning tool rather than a precise measurement of GHGs. Based on Local Government Operations (LGOP) Standards GHG emissions are organized according to their scope. The LGOP recommends an operational approach for local governments wherein a city defines its scopes by what they own and operate. In this way, the city can account for direct and indirect emissions separately.

The emissions are categorized into three different scopes:

- Scope 1: Direct emissions are deemed within the city's control, and are generated by fixed equipment used to produce heat or power from the stationary combustion process, and mobile combustion of fuels from city fleet vehicles
- Scope 2: Indirect emissions associated with the consumption of purchased electricity, steam, heating, or cooling, and
- Scope 3: Indirect emissions related to activities that the city does not own or operate, such as emissions from contracted services, employee commuting, or waste disposal.

As an ICLEI member, Scope 3 reporting is considered optional, but good to include as it may be policy relevant. City staff decided what data to include for contract provides (Scope 3 emissions) based on whether the information was obtainable, reliable, and relevant. It is important to note that we do not maintain operational control over all the emissions calculated in the municipal inventory, such as the Scope 2 and 3 emissions. However, the City can work with its contracted service providers to include options for the use of alternative fuels for vehicles that service our City. In the case of the City's providers, Waste Management, TruGreen, and CleanStreet, this is happening to some extent.

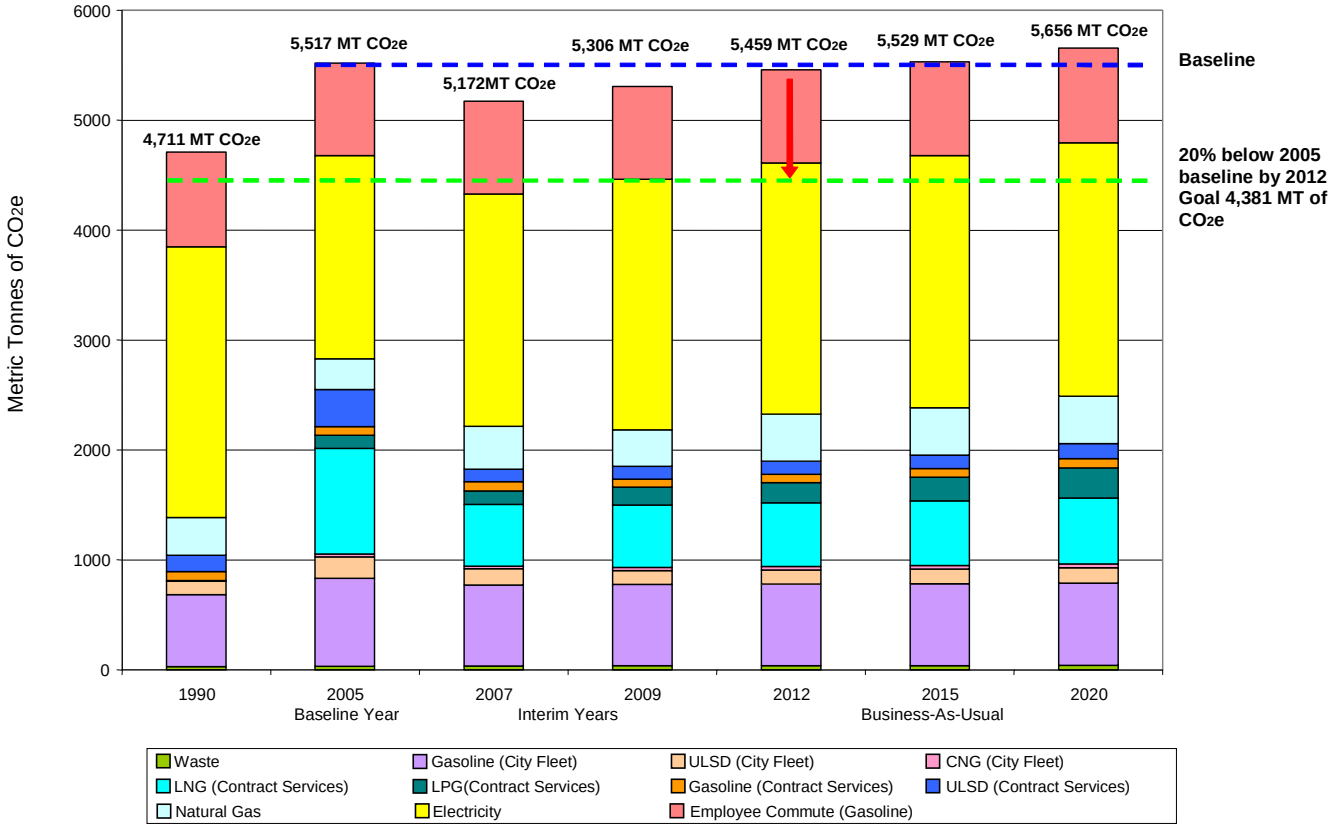
Greenhouse Gas Emissions Forecast

While our emissions goal equates to a reduction of approximately 15% below the City's municipal GHG emissions for 2007, if we do not take action to reduce energy consumption, the City is expected to increase its GHG emissions 0.6% each year until 2020.

Under a business-as-usual scenario, the City can expect emissions to rise to 5,459 metric tons of CO2e by 2012 that is equivalent to the annual GHG emissions from 1,044 vehicles.

The overall emissions represented in Graphic 1 below include not only City-generated emissions, but the Scope 3 emissions generated by our contracted services and landfill waste as well. Using this information we can also estimate the impact the implementing GHG reduction measures will have on overall municipal emissions levels.

Graphic 1: Preliminary GHG Emissions Progress Report 2009



Reducing the City's Carbon Footprint

Existing Environmental Programs

There are a variety of ways in which the City of Manhattan Beach is moving towards becoming a more sustainable city. Policies, measures and plans the City is currently working on will help reduce its carbon emissions footprint. A detailed description of the current and existing programs that City of Manhattan Beach is undertaking can be found in Appendix 1: Summary of Existing Sustainability Measures, they include:

- Energy Efficiency and Renewable Energy
- Sustainable ("Green") Building
- Waste Reduction and Recycling
- Vehicle Fleet and Low-Carbon fuels
- Green Purchasing
- Land Use, Community Design, and Efficient Transportation
- Water Usage and Conservation
- Promoting Community Participation

Notable Environmental Programs

When considering the City's existing program efforts alongside the 12 actions outlined in the U.S. Mayors Climate Protection Agreement, we have found that the City has made significant progress in meeting the goals of the Agreement (see Appendix 2). Listed below are a few key programs the City of Manhattan Beach has adopted which will impact its municipal, and community-wide, carbon footprint.

Sustainable Building

The City adopted a Sustainable Building Ordinance requiring municipal development to be certified at the LEED Gold standard, and large private construction to be attested to at a LEED Silver equivalence. The City has also waived permitting fees for solar installation in the community, drastically increasing the number of solar projects in the City.

Vehicle Fleet and Low-Carbon Fuels

The City requires its contract service providers to utilize alternative fuels in vehicles that service the City, including its taxi cab franchise and its waste hauler. For its own fleet the City purchases low-emission vehicles, such as hybrids and CNG vehicles, when feasible. The City has also leased all electric Mini-Coopers for use in its fleet as a method to reduce its fuel consumption.

Water Conservation

The City adopted a Water Conservation Ordinance in July 2009. Since implementation of the ordinance, the City has seen an impressive level of water conservation effort from the community. Based on a 5-year average, the City has seen a savings of approximately 20% each month in its water production levels. This amount of conservation is significant not only in the amount of water being saved in our drought-ridden region, but also for the amount of energy savings associated with transportation of that water to our City.

Municipal GHG Reduction Measures

Based on the City's GHG emissions inventory the three largest contributors to the City's municipal emissions are Buildings and Facilities, Vehicle Fleet, and Employee Commute. The Environmental Task Force reviewed this inventory and developed reduction measures to target these three areas. The City is already taking action on the other remaining areas in the inventory, Efficient Water Pumps and Street Lighting, summarized in Appendix 1. The City is taking significant action to improve its waste diversion and recycling, so the emissions from the Solid Waste area are negligible, as shown in Table 2 above. Therefore, the Environmental Task Force focused its recommendations to City Council on the City's energy audit results to improve building energy efficiency, the City's fleet replacement schedule, and the Employee Rideshare Program.

This Climate Action Plan takes into consideration those recommendations, and focuses on GHG reduction measures to tackle City operations with the highest emissions levels so that the City can begin to plan for project implementation in order to reduce its carbon footprint. These measures have varying costs and CO2 emissions reductions associated with them, and are outlined in Table 3 below.

Table 3: Summary of Measures Outlined in the Climate Action Plan to Reduce GHG Emissions

GHG Reduction Measures	Program Cost and CO2 Reduction (in metric tons)	Benefit to the Community
Energy Efficient Buildings: Implementation of Energy Audit Recommendations	• Costs range from $7,000 to over $1.5 million for various project • Additional rebates and incentives are associated with each measure • Over 280 MT CO2 can be reduced each year	• Energy Cost Savings • Reduce GHG Emissions • Improves Energy Efficiency of Municipal Facilities
Renewable Energy Sources: Wind and Solar Pilot Projects	• Small-wind turbines at Marine Park reduces 47 MT CO2/year • Solar Tree/Carport in Civic Center parking lot reduces 51 MT CO2/year	• Energy Cost Savings • Reduce GHG Emissions • Implementation of renewable energy projects shows City leadership and support of new technologies
Improved Transportation Options: Low-emission Fleet and Employee Commute Program	• Fleet replacement could reduce approximately 532 MT CO2/year • Employee Rideshare program saves an average of 28 MT CO2/year (funded through Prop A)	• Flexible fleet replacement results in the ability to take advantage of new technologies • Increase Rideshare Program participation • Fuel Cost Savings • Reduce GHG Emissions
Measures to Consider in the Future		
Storing and Offsetting Carbon Emissions: Tree Planting and Urban Forestry	• Tree maintenance estimated at $15K per year, and reduces 2 MT of CO2/year	• Offsets GHG Emissions • Improve watershed health • Habitat and air quality • Enhance the aesthetics of neighborhoods • Increase property values

Energy Efficient Buildings

Based on our GHG emissions inventory, City operated Facilities and Parks account for 25% of the City's municipal emissions. The City hired PE Consulting to conduct a Level III energy audit to better understand how it could improve the energy efficiency of its municipal operations and facilities. Based on the City's municipal GHG emissions inventory and the energy audit, there are several actions the City can take to reduce its emissions. Implementation of all 64 energy efficiency measures (EEMs) recommended by PE Consulting would cost nearly $7 million to implement, though it would bring the City an estimated $300,000 in annual cost savings from reduced energy consumption.

The Environmental Task Force reviewed the energy audit findings and made recommendations on which energy efficiency measures the City should pursue. The recommended projects range in cost from $7,000 to over $1.5 million, as shown in Table 4 below.

Table 4: Implementation of Energy Audit Results

Financial Cost and CO2 Reduction	Benefits to Community
• Costs range from $7,000 to over $1.5 million for various project • Additional rebates and incentives are associated with each measure • Over 280 tonnes of CO2 can be reduced each year	• Energy Cost Savings • Reduce GHG Emissions • Improves Energy Efficiency of Municipal Facilities • Implementation of a solar project shows City leadership and support of renewables

The detailed information presented in the audit by PE Consulting, as well as the organization of this data by the Public Works Department, was used by the Climate Action Subcommittee to develop a framework to prioritize the EEMs. Because of the complexity of the criteria, the Subcommittee did not use one formula to rank the projects, but analyzed the measures with several points of view. Therefore, the recommendations of the Subcommittee take into account different priority factors for each project (e.g. Initial Cost, Annual Energy Cost Savings, Metric Tonnes of CO_2 reduced, etc.), and are ranked to assist Council in choosing the measures that should be phased into implementation when feasible.

A summary of the 11 project recommendations from the Task Force are outlined below, showing each of the priority factors that were taken into consideration for that particular energy efficiency measure. If the 11 recommended projects were phased in over the next three years, the City would begin realizing nearly 300 metric tons of CO2 offsets from 2012 onwards. While this would make a significant decrease in our emissions levels, it would not meet the City's 2012 climate goals, unless the measures are implemented sooner.

Table 5: Summary of Annual CO2 Offsets

Year	Annual CO2 Offsets (in Metric Tonnes)
2010	28.5
2011	156
2012 and on	282

Energy Audit Recommendations

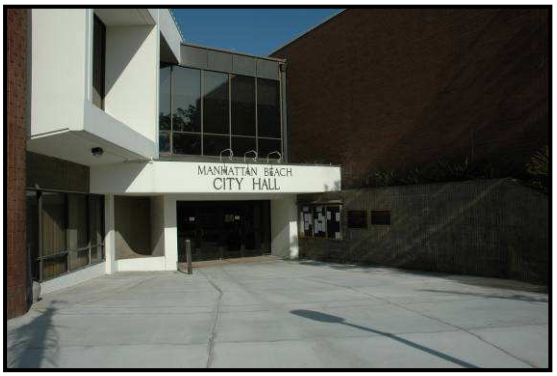
The Environmental Task Force understood the tough economic climate when it reviewed the energy audit and made the following recommendations. These recommendations are meant to act as a guideline for the City to consider when it is able to implement energy efficiency measures. The measures are ranked according to the priorities that the Task Force felt were most important for that particular measure. They were not ranked solely for their GHG offset capability, or for the return on investment, but considered all the factors presented by the consultant together.

PROJECT RECOMMENDATION #1 – **MANHATTAN HEIGHTS PARK**

PROJECT	INITIAL COST
Install high efficiency HVAC	$57,816
TOTAL TONNES	MAINTENANCE NEEDS
5.4	Rank #1 HVAC has no useful life—Failure imminent

PROJECT RECOMMENDATION #2 – **CIVIC CENTER**

PROJECT	INITIAL COST
Replace Chamber of Commerce HVAC Install induction lighting Connect to EMS Solar controlled glass New VAV system Commissioning Efficient Cooling System for City Hall	$1,541,152 Annual Savings: $86,580
TOTAL TONNES	MAINTENANCE NEEDS
200.2 (25% of Reduction Needed to Meet Municipal Climate Commitment)	Deferred Maintenance; Most Community Visibility



PROJECT RECOMMENDATION #3 – **PUBLIC WORKS YARD**

PROJECT	INITIAL COST
Install high efficiency HVAC; Replace unit heaters; induction lighting	$144,017 Annual Savings: $11,555
TOTAL TONNES	MAINTENANCE NEEDS
30.1	Deferred maintenance; Heavily used, long-term facility

PROJECT RECOMMENDATION #4 – **POLLIWOG PARK**

PROJECT	INITIAL COST
Install high-occupancy sensors and induction lighting	$44,312 Annual Savings: $9,656
TOTAL TONNES	PAYBACK
15.7	4 YEARS ROI - 21.79%

PROJECT RECOMMENDATION #5 – **LIVE OAK PARK**

PROJECT	INITIAL COST
Install high efficiency HVAC	$19,540
TOTAL TONNES	MAINTENANCE NEEDS
3.0	No remaining useful life.

PROJECT RECOMMENDATION #6 – MARINE PARK

PROJECT	INITIAL COST
Reduce light fixtures, install induction lighting	$32,929
TOTAL TONNES	ANNUAL SAVINGS
5.2	$4,010 ROI = 12.18%

PROJECT RECOMMENDATION #7 – MANHATTAN VILLAGE PARK

PROJECT	INITIAL COST
Efficient lighting	$7,627
TOTAL TONNES	PAYBACK
3.2	3 Years ROI = 25.92%

PROJECT RECOMMENDATION #8 – **JOSLYN CENTER**

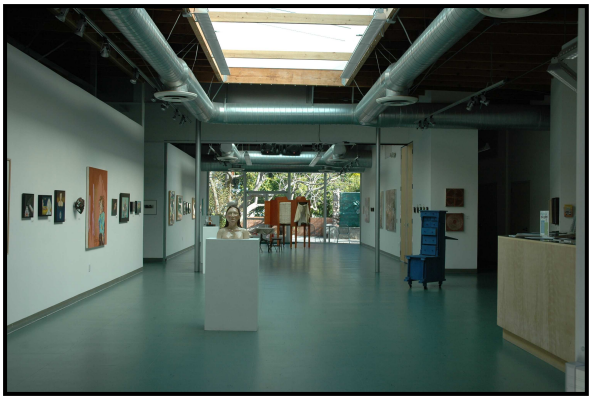
PROJECT	INITIAL COST
Install high efficiency HVAC; CFLs; occupancy sensors	$88,152
TOTAL TONNES	
10.5	

PROJECT RECOMMENDATION #9 – FIRE STATION #2

PROJECT	INITIAL COST
Install high efficiency HVAC; radiant tube heater in garage	$24,535
TOTAL TONNES	MAINTENANCE NEEDS
3.5	Permanent Emergency Facility

PROJECT RECOMMENDATION #10 – MANHATTAN HEIGHTS ANNEX

PROJECT	INITIAL COST
Install high efficiency HVAC; induction lighting; occupancy sensors	$56,449
TOTAL TONNES	
2.5	



PROJECT RECOMMENDATION #11 – SAND DUNE PARK

PROJECT	INITIAL COST
Induction lighting	$6,949
PAYBACK	ROI
5 Years	16.91%

While the City will have to consider how it will fund and develop bidding requirements for large energy efficiency measures, such as Project 2, it can move forward with other projects. For example, assuming that no other energy efficiency measures are taken, if the first four project recommendations identified by the Task Force are phased into implementation over the next two fiscal years, the City will realize actual energy savings, and will be on track to meet its emissions reductions goal. Implementation of the top four projects come at a cost of approximately $1.8 million, and offer an annual savings in energy costs of nearly $110,000 and a reduction of 251 metric tons of CO2. These highly prioritized energy measures would bring the City within 600 metric tons of reaching its 2012 climate action goal of 4,381 metric tons of CO2.

Table 6: 2012 Emissions Goal Summary—Based on Project Implementation

Emissions Goal—7% below 1990 levels	**4,381 MT**
Business–as–usual	5,450 MT
Project 2	5,096.7 MT
Project 1,3,4	5,269 MT
Combined Projects 1,2,3,4	**4,968.7 MT**

Renewable Energy

Solar Projects

PE Consulting identified 13 potential solar projects in the City, and the Task Force recommended these projects as ideal candidates for grant funding, purchase power agreements, or other financing agreements with solar companies.

Table 7: Proposed Solar Projects for the City of Manhattan Beach

Project Description	Initial Cost	CO2 Offset (MT)
City Hall Rooftop: 32.5 kW DC Solar PV	$191,100	14
Joslyn Center Rooftop: 45.1 kW DC Solar PV	$264,910	19
Live Oak Park Rooftop: 21.1 kW DC Solar PV	$124,165	9
Live Oak Park Rooftop: 2.1 kW DC Solar PV	$12,280	1
Manh. Heights Annex Covered Parking: 18 kW DC Solar PV	$134,618	8
Manh.Heights Park Covered Parking: 26.9 kW DC Solar PV	$201,926	12
Parking Structure Covered Parking: 3 kW DC	$22,436	1
Parking Structure Covered Parking: 37.4 kW DC Solar PV	$280,453	17
Parking Structure Covered Parking: 15 kW DC Solar PV	$112,181	7
Peck Reservoir Water Tank Mounted: 189 kW DC Solar PV	$1,041,343	80
Public Safety Covered Parking: 112.2 kW DC	$777,827	51
Public Works Yard Rooftop: 87.2 kW DC Solar PV	$480,472	37
Water Block #35 Water Tank Mounted: 148.2 kW DC Solar PV	$816,560	63
Total Cost	**$4,460,272**	**319 MT**

The Task Force and City Council have acknowledged the importance of pursuing a solar project in a highly visible location in order to show the public that it can lead by example in supporting renewable energy. One such project identified by the consultant, and supported by the Task Force, is the Covered Parking project (a.k.a. Solar Carports or Solar Trees) in the Public Safety/Civic Center parking lot. This project is estimated at $778,000 with a reduction of 51 tonnes of CO2 per year. With the potential for grant funding, a power purchase agreement, or low-interest financing for energy efficiency measures, staff is confident that the City can pursue any, or all, of the renewable energy projects summarized in Table 7 above at low, or no, cost.

Small Wind Turbines

City Staff is discussing a proposed pilot project to bring wind turbine technology to the community. We are working with a local Manhattan Beach company, Windstream Technologies, to implement a renewable energy project using vertical axis, small-wind turbines to generate power at Marine Avenue Park. Through the use of its uniquely designed TurboMills, WindStream Technologies has proposed an interesting pilot project to assist the City in reducing its carbon footprint, at no cost. The WindStream project is estimated to generate 64,920kWh per year, thereby reducing GHG emissions 47 MT CO2 each year. Projects like this will allow the City to show its leadership in renewable energy programs, while promoting the development of new technologies.

Improved Transportation Options

Replacement Schedule of the City's Vehicle Fleet

The City's vehicle fleet composes 35% of 2007 municipal emissions levels. This amount has decreased significantly from 2005 levels, mainly due to the reduction in Scope 3 emissions from the City's contracted services. To reduce emissions in this area the City considered replacing its entire fleet with low-emission vehicles. However, total fleet replacement would cost an estimated $1,958,000 (Cost of replacement vehicles, less resale value of vehicles replaced). Therefore, the Environmental Task Force recommended against total replacement of the fleet, and suggested that replacement of the City fleet with low-emission vehicles should occur as part of the normal vehicle replacement cycle in order to best take advantage of new technologies. The cost to replace individual vehicles with environmentally friendly options would be assessed at that time.

The City is already committed to contractually requiring the greening of its service providers' fleets (taxi cabs, refuse hauling, landscaping, street sweeping, etc.), and to using B-5 biodiesel where possible. The City began using biodiesel in late 2009 and is expected to reduce life-cycle CO2 emissions by 78% when compared to the use of petroleum diesel.

As alternative fuel and electric vehicle technologies are rapidly evolving, it is unclear which of the current technologies will prove most beneficial for City use. Future infrastructure development, such as a regional Liquid Natural Gas or a Compressed Natural Gas terminal, which would serve a larger multi-jurisdictional client base also need to be considered as it will impact the fuels the City, and community, have access to. Should regional fueling become an available option, local agencies could facilitate alternative fuel use by allowing public access to the facilities.

Employee Commute Program

Based on the municipal GHG emissions inventory, Employee Commute contributes to 16% of the City's emissions levels. The California Air Resources Board has found that, "Carpool and Rideshare represents one of the ripest areas of low hanging fruit when it comes to reducing passenger vehicle emissions." The City currently operates an Employee Rideshare Program which provides incentives to those employees that carpool or use alternative modes of transportation. The Task Force recommended a method to broaden the program to include high MPG vehicles and ensure that all participants receive a rideshare incentive based on their participation in the program. The program is funded through Prop A, and saves an average of 28 MT of CO2 emissions each year. The goal of restructuring the Rideshare Program is to incentivize staff that commute from farther distances and to increase employee participation in the program as a way to reduce GHG emissions in the Employee Commute sector of our municipal operations.

Measures for Future Consideration

Storing and Offsetting Carbon Emissions
In the future, the City may want to consider methods to store and offset CO2 emissions, in addition to implementing GHG reduction measures, as a way to reduce its carbon footprint. Programs like tree planting and urban forestry management can have a significant impact on the amount of CO2 offset each year, as well as overall positive benefits to the community in terms of air quality and aesthetics. In the case of tree planting and care, tree maintenance estimated at $15,000 per year, while GHG emissions can be reduced by two metric tons per year. The City has an existing Tree Canopy Restoration Fund with $50,000 in funding available to implement a tree planting program.

Other types of carbon emissions offset programs can be considered as well, such as renewable energy credit programs. While there is a carbon market in existence, the programs may not have as big of an impact on the City of Manhattan Beach until a regional, or national, carbon emission cap and trade program is put into place.

Community Wide Emissions Reduction Measures
As the City moves forward with its climate action planning program, there are several measures that extend beyond municipal GHG emissions reductions. GHG emissions, whether from government operations or throughout the City, have an impact on the entire community's environmental footprint. While the City has not yet set a community-wide emissions reduction goal, an inventory of the community's GHG emissions is currently being conducted by the South Bay Environmental Services Center, as part of the City's partnership with the South Bay Cities Council of Governments (SBCCOG). To begin addressing the issue of community-wide GHG emissions, the Environmental Task Force has considered some transit-related measures (e.g. traffic circles and bicycle lanes), which can have an impact on reducing the community's carbon footprint.

As the results of the community-wide emissions inventory are tabulated, the City can begin to work with the public on setting a community-wide emissions reduction goal. Some communities are beginning to declare "net-zero energy" as the goal to strive towards. These goals are certainly achievable, and coupled with the City's existing strong Sustainable Building programs and outreach efforts on energy conservation, it is a goal that City of Manhattan Beach can consider.

Other Options for Climate Action Targets
In 2007, the City made a commitment to reduce our carbon footprint approximately 15% below current emissions levels. Unless several of the GHG reduction measures identified in the Climate Action Plan are implemented, it is unlikely that we will meet this goal. While the City should continue to strive towards meeting its U.S. Mayors Climate Protection Agreement commitments, and there are incentives, rebates, and grant awards available to assist the City in doing so, it may be necessary to consider adopting another GHG emissions reduction goal. For example, the State of California is aiming to reduce overall GHG emissions to 1990 levels by 2020. Other California cities such as Long Beach, Piedmont, and Menlo Park, have adopted goals to reduce emissions 15% below 2005 levels by 2020.

Conclusion

The City of Manhattan Beach takes very seriously its role as steward of the environment. Being a small coastal community, we understand the privilege of our proximity to our ocean resources, and the responsibility we have to maintain and protect it. From our resident satisfaction surveys that note the high priority of ocean and beach quality, to the overwhelming support of initiatives like the plastic bag ban and water conservation ordinance, the City is aware of the value of the environment in this community.

The City has seen considerable success in its environmental programs, and much of this is due to the grassroots efforts that begin in our neighborhoods and in our schools to promote environmental protection. Our residents' commitment to the environment is evident in their dedication to the community, and passionate involvement in our local government. We build on this base of environmental activism to continue pushing ourselves forward as we work towards sustainability.

A prime example of our residents pushing the City forward lies in the movement to sign on to the U.S. Mayors Climate Protection Agreement. This initiative began with a request brought to our City Council in late 2006, which was adopted in January 2007. As we now move into the next phase of our climate action planning, our residents are once again at the forefront of this effort. With the help of our Environmental Task Force, the Climate Action Plan outlines the City's current emissions inventory results, and proposed measures to reduce our carbon footprint.

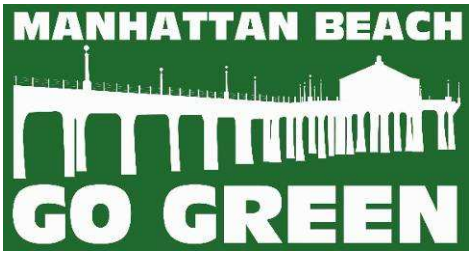
Planning for environmental policies can be difficult in challenging times; however, there is a nexus between energy efficiency, cost savings, and reductions in environmental impacts. This Climate Action Plan is intended to serve as a guideline to help shape the City's decision making in the next few years. The greenhouse gas reduction measures proposed in this plan will be brought back to City Council for funding, when feasible. By focusing on these key areas, this municipal Climate Action Plan is a stepping stone for the City of Manhattan Beach to not only guide its operations, but also to begin developing community-wide environmental and sustainability goals.

Appendix 1: Summary of Existing Sustainability Measures

The City of Manhattan Beach has always been sensitive about the environment, implementing a variety of programs considered environmentally friendly. The City's General Plan, which lays out the long-term goals, programs and policies for future development, contains a number of policies which support a "greener" Manhattan Beach. These include:

- Implementing construction and demolition programs that require enhanced recycling efforts
- Implementing storm drain programs to protect our ocean and coastal beaches
- Using reclaimed water to irrigate many of our green spaces
- Encouraging maximum recycling in all sectors of the community, including residential, commercial, industrial, institutional, and construction
- Purchasing more recycled and environmentally friendly products
- Purchasing alternative fuel, hybrid and gas efficient vehicles when possible
- Installing energy and water saving devices in City buildings where possible

Not only will the policies, measures and plans the City is currently working help conserve natural resources, they will also help reduce the City's carbon emissions footprint. Below is a summary of historic and current measures the City is involved in to move towards becoming a more sustainable city:



- Energy Efficiency and Renewable Energy
- Waste Reduction and Recycling
- Sustainable ("Green") Building
- Land Use, Community Design, and Efficient Transportation
- Water Usage and Conservation
- Vehicle Fleet and Low-Carbon fuels
- Green Purchasing
- Promoting Community and Individual Action

Energy Efficiency and Renewable Energy

The City of Manhattan Beach is committed to energy conservation in all of its facilities and structures, as well as in its daily operations. These facilities include parks and recreation buildings, fire and police stations, parking structures, sewer lift stations, public works yard, wells, pump houses, and general civic office space.

Energy Audit: In 1995, Manhattan Beach undertook its first major step towards citywide energy conservation by employing the services of Honeywell to analyze all City facilities, and develop a performance based proposal to retrofit or replace less energy efficient equipment. The comprehensive study included analyses of electrical and natural gas bills, existing lighting,

motorized equipment, and heating and ventilation equipment. The City recently underwent a Level III Energy Audit with PE Consulting. The audit detailed anticipated carbon emission offsets, cost per ton to achieve these offsets, strategies to implement retrofits or new construction, and recommendations regarding prioritizing energy conservation measures (ECMs).

Lighting retrofit: Where practical, existing lighting fixtures were retrofitted from the older T-12 fluorescent lamps and magnetic ballasts to the then new T-8 fluorescent lamps and electronic ballasts. Specular reflectors (chromed grates) were also installed to further enhance light distribution. Where retrofitting was not an option, light fixtures were replaced in their entirety. Incandescent fixtures, whether for perimeter, interior, or security lighting, were also replaced with compact fluorescents or high intensity discharge (HID) lamps, such as high pressure sodium (HPS) lamping. Public works has submitted a Capital Improvement Request for fiscal years 2010/2011 using information from the Level III Energy Audit. Part of the project scope is to assess and retrofit lighting in City Hall to more efficient fixtures, using LED, inductive and daylighting technologies as may be suggested during the design phase.

Efficient Street Lighting: The City is illuminated at night by approximately 1,800 Edison streetlights and 700 City streetlights. An additional 200 Los Angeles County streetlights are located at signalized intersections to provide traffic safety lighting. There are also approximately 115 natural gas lamps operating in a specialized district in the City. Although the majority of the City's streetlights are owned and operated by SCE, Manhattan Beach is billed for their electricity usage on an averaged annualized basis. The City applied for stimulus grant funding to replace existing City-owned streetlighting with energy efficient lighting. The project will reduce an estimated 3,100 metric tons of CO2e each year. Public Works is beginning the LED lighting selection process, and will start the project by retrofitting the Strand lights by early Fall 2010. Additionally, SCE has several pilot programs planned in Southern California to assess LED or inductive lighting efficacy and costs. Upon completion of the study and pilot programs, SCE will offer local agencies methods to retrofit their installed streetlighting.

LED Traffic Signals: The City has 49 signalized intersections, some of which have been retrofitted either completely or partially from incandescent bulbs to Light Emitting Diode (LED) cluster lighting, reducing their energy usage by about 90%. The City is working with the County of Los Angeles to replace existing traffic signals with LED lighting in an effort to become more energy efficient and reduce GHG emissions.

Installing High Efficiency Motors: Variable frequency drives (VFDs) and high efficiency motors were fitted to frequently used electric motors and pumps, especially at sewer and water pumping facilities. These motors and drives not only save energy, but because the rotation speed can be variably controlled, they allow for more exacting control schemes.

Heating and Air Conditioning system upgrades: Inefficient, aging, heating ventilation and air conditioning systems (HVAC) were replaced and/or updated. Stand alone package units (the type most familiar to homeowners), were replaced with newer units that had higher SEER ratings (seasonal energy efficiency ratio, equivalent of Energy Star ratings, specifically designated for HVAC equipment). Chiller and compressor motors were fitted with VFDs where practicable and

older variable air volume boxes (VAV) were replaced with more modern and efficient models. When combined with modern direct digital controllers (DDC), HVAC control became more reliable and precise.

Building upgrades: The new Public Safety Facility employed several newer technologies to achieve energy efficiency, including design criteria specified by a by a Leadership in Energy and Environmental Design (LEED) certified architect. During the design process of the facility, Southern California Edison provided in-depth computer modeling to help the City evaluate potential energy savings while also considering other potential, unwanted impacts of the design.

Fee waiver for solar power installation: In March, 2008 the City approved the initial waiver of solar permit fees. In 2007, before the waiver was in place, the City issued 13 permits; in 2008, following the waiver, the City issued 34 permits. The fees charged average $648 per project, and the value for the permits issued in 2008 was approximately $22,000. After a one-year review period, the permit fee waiver appeared to be an effective incentive to promote sustainable building. In February 2009, City Council voted to extend the plan check and permit fee waiver for solar panel installation indefinitely.

Solar Water Heating
The Municipal Code currently requires solar water heater plumbing stub outs for new homes in order to accommodate future solar panels. The Green Building Subcommittee recommended that all pools be heated with 60% renewable energy, such as solar water heating.

Solid Waste and Recycling

Solid waste franchise agreement with single provider: The City has extended its contract with Waste Management until April 30, 2011, at which point a determination will be made to renew the contract or begin the bidding process. The solid waste provider services approximately 500 trash and 140 recycling containers for the City. The hauler also educates residents and businesses on the benefits of recycling through their website, mailers, and occasional visits to homes and businesses. In 2008, the City's solid waste diversion rates are as follows: Single Family Residential - 57% diversion rate; Commercial [Businesses, Multi Family, Schools, Public Containers] - 16% diversion rate; Construction & Demolition - 70+% diversion rate.

Recycled Waste: The City's recycling efforts are comprehensive and include residential curbside recycling, commercial recycling, green waste and composting, household hazardous waste collection, construction and demolition debris management, school based recycling, and education. Like solid waste, virtually all of the City's recycled waste is managed through a contract with Waste Management as is a portion of the City's public education program.

Residential Waste Collection: 3-cart service
All green waste (grass clippings and tree trimmings) and other recycling (plastics, paper, etc.) are provided free to our residents through our refuse hauler contract. Due to the area's narrow streets, the sand section neighborhoods receive weekly manual collection services (i.e., each bin is manually dumped into a trash or recycling truck). These residents must provide their own 32-gallon gray trash containers, while Waste Management provides blue recycling and green waste

containers. All other areas of the City are serviced weekly using semi-automated collection trucks and are provided a choice of 64 or 96-gallon gray, blue, and green toters (carts with wheels). In 2004, the average resident produced 820 pounds of solid landfill waste. By 2006 this volume had decreased by approximately 6.3% to 769 pounds, suggesting that recycling among residents is improving.

Commercial Waste Collection: The City's commercial waste collection program is incentive based. The size, number of trash cans, and/or cubic yard bins used and the frequency of collection for landfill disposal determine each business's waste collection rate, i.e., those businesses that produce greater amounts of landfill waste pay higher waste collection fees. However, recycling bins and collection services are provided free of charge. In 2006, each of the City's commercial refuse accounts diverted, on average, 22,045 pounds of waste to recycling, an increase of 3,557 pounds over 2005, but still somewhat less than the City's 50% recycling goal.

Hazardous Waste: On its website, the City highlights locations and opportunities for residents and businesses to dispose of household hazardous waste (HHW), electronic waste (E-waste), and universal waste (U-waste). The City promotes the use of the S.A.F.E. Collection Center at the Hyperion Treatment Plant for hazardous materials that residents wish to dispose of. The City also co-sponsors a HHW collection event each year with the County of Los Angeles, Department of Public Works. In 2009, the City implemented a Pharmaceutical Drop-Box in its Civic Center, as well as provided Battery Collection containers in City facilities for residents to use.

Sustainable ("Green") Building

LEED Standards for Municipal and Large Commercial Development

Effective August 6, 2009, the new Sustainable Building Ordinance 2124 requires Leadership in Energy and Environmental Design (LEED) standards for new municipal buildings and large non-residential construction. Municipal buildings must meet the higher Gold standard of the LEED requirements, including registration of the project. Non-residential construction must meet at least the equivalent of the Silver LEED standard, but need not register the projects.

Environmentally Friendly City Facilities

The new Police and Fire Facility, recently completed in 2006, earned LEED credits for various aspects of its design which used high efficiency lighting, high performance glazing, skylights, integrated daylighting, fly ash cement, and drought-tolerant landscaping. In late 2005, the City's vibrant downtown business district was expanded to include the new Metlox Town Square and 460 space subterranean public parking structure. As a mixed-use development with centralized parking that services not only the Metlox project, but the entire Downtown, the project promotes a pedestrian friendly environment, encouraging residents and visitors to park and walk throughout the Downtown area.

Construction Debris Recycling

Currently, under the City's Construction and Demolition Ordinance, builders must provide verification of recycling debris to achieve or exceed our goal to reuse or recycle at least 50% of project waste. The Green Building Subcommittee of the Environmental Task Force recommended increasing this amount to 65%, which City Council approved in March 2010. The

Community Development Department is now updating its Municipal Code to reflect these changes and will issue a new Sustainable Building Ordinance.

Storm Water Management and Low Impact Development
Manhattan Beach has 24.1 miles of storm drains within its jurisdiction. Many of the City's largest storm drain lines (8.5 miles) are owned and operated by the Los Angeles County Department of Public Works (LAC DPW), while the City owns and maintains the remaining 15.6 miles of smaller storm drains, and all 505 associated catch basins. The City actively participates in the National Pollutant Discharge Elimination System (NPDES) requirements. As required by the municipal NPDES permit, Manhattan Beach has implemented many measures to control polluted runoff from reaching the ocean. In addition, the Community Development Department has been working with the Green Building subcommittee of the Environmental Task Force to develop measures to reduce impervious surface area on construction projects that will be incorporated in a low impact development ordinance.

Land Use, Community Design, and Efficient Transportation

Residential & Commercial Environmentally Friendly Development Practices
The City has several programs and policies in place that either encourage or mandate the implementation of environmentally friendly practices for new and remodel development projects. These include recycling construction debris, preparing homes for solar water heating, complying with the California Energy Code, installing permeable driveways, recycling car wash water, creating pedestrian friendly walkways, and embracing other design guidelines.

Urban Forests
Manhattan Beach currently employs many sustainable maintenance practices in its more than 100 acres of parks and open space. Additionally, Manhattan Beach maintains the pier and plays a supporting role in maintaining the 2.1 miles of adjacent County beaches; combined these locations drew an estimated 5.3 million people in 2006. The West Basin Water Reclamation Facility constructed and supplied points of connection for reclaimed water throughout Manhattan Beach starting in 1994. Several of the City's larger parks, school grounds and facilities, totaling more than 77 acres, have been converted to reclaimed water use based on the distance and costs involved in pipeline installation. The City also maintains several areas of drought tolerant plants, including plantings in the downtown district that can highlight the use of drought tolerants to residents. The Manhattan Beach Botanical Garden also works with the City to provide several free educational classes to residents on drought tolerant planting and composting.

Efficient Transportation
The City is designed as a walkable community, with amenities that are pedestrian and cyclist friendly such as the well-used Manhattan Beach Strand and Green Belt. The City is also considering the feasibility of a trolley system to better transport community members to the downtown area and other business districts, Manhattan Village Mall, and the beach. The City is currently supporting the South Bay Bicycle Coalition's (SBBC) effort to develop a comprehensive, regional bicycle plan. SBBC was awarded $240,000 in federal funding through a grant opportunity from the Los Angeles County Department of Health. A portion of this funding will be used to update the City's current Bikeway Plan.

In February 2005 City Council considered a Citywide Bikeway Study, however, due to concerns over the loss of parking to create dedicated bicycle lanes, the study did not go through the public hearing process. The Climate Action Subcommittee supports updating the 2005 Citywide Bikeway Study with new traffic devices such as "sharrows" (pictured at right), in addition to creating dedicated bike lanes in the City. Studies have demonstrated that sharrows improve bicycle-vehicle interactions, increase legal and safe bicycle riding, and improve safety with minor implementation cost. In Manhattan Beach, 66 traffic collisions with bicycles were reported from 2004-2008, demonstrating an opportunity to enhance public safety for residents.

Water Usage and Conservation

The City of Manhattan Beach operates its own water utility and provides nearly six million gallons of water per day to meet the needs of its total residential, commercial and open space demand. The City's water supply includes a combination of potable (96.4%) and non-potable (3.6%) water. The majority of the potable water used, nearly 84%, is supplied by the Metropolitan Water District (MWD), while two City wells supply the balance.

Water Conservation Ordinance: In 2009 the City adopted an update to its existing Water Conservation Ordinance. The ordinance places restrictions, such as limited watering hours, on residents and businesses, as well as additional restrictions for different drought response levels. The conservation ordinance has been received with success by the City's residents. Since implementation of the ordinance began in July 2009, the City has seen a 20% reduction in water production when compared to the five-year average for those months. The City is proud of its residents for adhering to the conservation ordinance and making an effort to change their habits to save this precious resource.

Vehicle Fleet and City-Contracted Service

Purchasing Fuel-Efficient Vehicles: Currently, the City's fleet includes twenty-two alternative fuel or hybrid vehicles, not including police and fire vehicles. Fifty-five vehicles in the City's fleet are eligible for replacement with a low-emission vehicle. During its replacement cycle, each vehicle is evaluated with fuel economy in mind while also considering the needs of the end user. For example, whenever feasible, maintenance vehicles are purchased with CNG powered engines. The City's fuel efficient fleet includes twelve compressed natural gas (CNG) fueled vehicles (including a CNG Dial-a-Ride bus as well as a CNG maintenance patch truck), five hybrid vehicles, two electric vehicles, and three propane vehicles. The Fire Chief drives a hybrid vehicle, and the Police Department maintains five hybrids and one electric vehicle, including a hybrid vehicle driven by the Police Chief.

Fuel-Efficient City-Contracted Service Providers: The fuel consumption of the City's contract service providers is included in our emissions analysis. This includes Waste Management for trash & recycling, CleanStreet for street sweeping, and Tru Green for landscaping. Ultra Low Sulfur Diesel and Propane were consistently used by the City's service providers in an effort to reduce GHG emissions from their vehicle fleets. The City also instituted a low-emission vehicle policy for its taxi franchise. All taxi cabs permitted to operate within the City of Manhattan Beach must be low-emission vehicles.

Green Purchasing

The City recently adopted a Green Purchasing Plan with a goal of conserving natural resources by purchasing products that are environmentally friendly whenever feasible.

Table 1: Adoption of a Green Purchasing Plan

Financial Cost and CO2 Reduction	Benefits to Community
• Increased cost of 2-5% over current practice for some items • Estimated 5% cost savings for some green purchasing • Program would conserve natural resources, and reduce CO2 through the purchase of energy efficient products	• Warehouse Supply and Contract Cost Savings • Energy Cost Savings • Reduced GHG Emissions • Shows the City leading by example through the promotion of Responsible Purchasing

A green purchasing plan will help the City balance environmental considerations with traditional performance, availability, and cost concerns. While there can be a cost premium associated with some green purchasing, financial and environmental benefits are achievable. For example, Santa Monica has seen a five percent price savings after implementing a green cleaning program as part of a green purchasing program. Other organizations, including the Chicago Public School System and the states of Massachusetts, Minnesota, and Vermont also report finding green cleaners to be cost competitive. The City of Phoenix has shown cost savings through changes in the purchasing of electronic equipment, pesticides, printing and office supplies (saved $8,000), janitorial products, and cleaners (saved $10,000).

The City currently makes several green purchasing choices, and is also including green practices in its current bid for janitorial services contracts. As an example, 60% of the City's current office supply purchasing is considered "green" purchasing by Office Depot. In addition, the South Bay Cities Council of Governments is starting to develop a region-wide green purchasing program that may make it easier for local governments to work with manufacturers to purchase responsibly. By adopting a green purchasing plan, the City becomes eligible for grant opportunities it would not otherwise qualify for.

Promoting Community Participation

Education and Outreach

The City has an extensive and varied public education program highlighting its many environmental efforts. One of the most visible of these efforts is the 19-member resident based

Environmental Task Force. The Task Force is arranged into four subcommittees focusing on: Climate Action, Green Building, Solid Waste and Recycling, and Water Conservation and Storm Water Management. The subcommittees meet monthly and then bring their ideas to the entire Task Force during monthly public meetings. The Task Force holds monthly public meetings to discuss priority environmental issues, solicit feedback from the public, and develop recommendations to make to City Council. To date the Task Force has developed and brought forward the Water Conservation Ordinance and the Sustainable Building Standards Ordinance. The Task Force is currently developing other sustainable building measures to include in the City's Building Code, as well as water conservation measures to improve landscaping and the reduction of impervious surfaces. The Task Force will also work with the City's residents and businesses to develop a solid waste reduction goal, and is working on energy efficiency outreach programs.

The City actively participates in promoting the programs of local partners, such as the water conservation programs offered by West Basin and the Metropolitan Water District of Southern California, including high efficiency toilet exchanges, free landscape audits and irrigation controllers, and free water brooms. The City also partners with Los Angeles County to hold an annual hazardous waste round-up at City Hall. To promote the importance of maintaining the quality of our marine environment, the City implements a multi-faceted public education program to inform residents and businesses of how they can partner with the City in pollution prevention. The City also hosted a Reusable Bay Giveaway to encourage residents to bring their own reusable shopping bags with them to prevent plastic bags from ending up in the ocean.

Environmental Task Force

In June, 2008 City Council decided to form a resident-based Environmental Task Force (Task Force) to study environmental issues of priority to the community. Staff solicited applications and on September 2, 2008 City Council reviewed these applications and selected 14 residents to serve on the Task Force. Council then appointed two representatives to the Task Force, Mayor Mitch Ward, and Council Member Portia P. Cohen. The remaining positions were appointed by the MB Unified School District, including Amy Howorth School Board Member, and two student representatives.

The 19-member Environmental Task Force had its first meeting on October 15, 2008, and divided into four subcommittees to tackle priority environmental issues identified by City Council: the Development of a Climate Action Plan; Water Conservation and Storm Water Management Issues; Waste Reduction and Recycling; and Sustainable ("Green") Design. Since the first meeting of the Task Force the subcommittees have made significant progress on environmental policies in the City, and on increasing the community's eco-awareness.

Climate Action Subcommittee

The Climate Action Subcommittee is comprised of five members with varying backgrounds, from a Mira Costa High School student to the President of the local nonprofit, Environmental Priorities Network. The subcommittee's mission is two-fold, first, to identify methods in which the City can reduce its carbon footprint, and second to develop the potential for community-wide education on climate change. City Staff provide support to the Subcommittee as well, including the City's Environmental Programs Manager, Maintenance Superintendent, Purchasing Manager,

and Public Works Management Analyst. The subcommittee was tasked with reviewing the Green Report to understand the sources of municipal GHG emissions, and identify measures to reduce these emissions, thereby assisting the City in meeting the commitments of the U.S. Mayors Climate Protection Agreement. Upon review of the City's GHG emissions inventory, the Subcommittee identified several areas where energy efficiency measures could be implemented to reduce the City's carbon footprint. Additionally, through the study of other cities' climate and sustainability plans, green purchasing polices, and transportation programs, the Climate Action Subcommittee has identified measures that will help the City meet its GHG emissions reduction goal, as well as incorporate public education into a community-wide emissions reduction campaign.

The Climate Action Subcommittee has been very successful in several community outreach efforts and programs. The Task Force as a whole has been very supportive of several other outreach efforts, such as educating the public during the Earth Day and Hometown Fair events, and participating in programs like Earth Hour, 350 Climate Action Day, Solar Homes Tour, and the Energy Efficiency 101 class. Table 2summarizes the key outreach programs that have been developed with the help of the Environmental Task Force.

Table 2: Public Outreach Programs Supported by the Climate Action Subcommittee

Public Outreach Program	**Impact of Program**
Carbon Footprint Calculator on website	The calculator on the website makes it easy for residents to measure their environmental footprint; also provides information on taking a free in-home energy audit, and rebates and incentives to make energy and water conservations improvements to homes and businesses in the City
Earth Hour – Lights Out Event	The Environmental Task Force supported this event, encouraging neighbors and businesses to join the City in turning out non-essential lighting to promote energy conservation
Solar Homes Tour	Creation of Manhattan Beach's 1st Annual Solar Homes Tour in conjunction with the Environmental Priorities Network resulted in over 30 individuals touring 5 solar homes to learn more about sustainable development and renewable energy
Earth Day and Hometown Fair Booths	The Environmental Task Force hosted informational booths at both events to reach out the public and keep them informed of new environmental policies and programs in the City
Kill-a-Watt Loaner program	The subcommittee developed an energy monitoring loaner program to help residents easily measure the amount of energy consumed in their homes
350 International Day of Climate Action	The Environmental Task Force participated in the largest climate action event in California's history, drawing people from all across the County to learn about climate change and make a statement for climate action

Appendix 2: Progress Made on the U.S. Mayors Climate Protection Agreement

With the City Council's endorsement of the US Mayors Climate Protection Agreement, Manhattan Beach is acknowledging the dangers associated with climate change and making a commitment to take steps to reduce greenhouse gas emissions to seven percent below 1990 levels by 2012, a goal often referred to as the Kyoto Protocol.

This commitment includes considering alternatives to fossil fuels and accelerating the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste-to-energy, wind and solar energy, fuel cells, efficient motor vehicles, and bio-fuels.

To help the City reach or exceed these goals, the City has agreed to try to reduce greenhouse gas emissions by taking measures to improve its operations, and eventually the entire community. These measures are outlined according to the 12 actions prescribed in the U.S. Mayors Climate Protection Agreement, and include:

1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan;

- **Action taken:** Nov 2007 completion of GHG inventory and setting of reduction targets; Inventory of interim emissions years completed for 2007 and 2009; Development of climate action plan, April 2010

2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;

- **Action taken:** Feb 2008 requirement for open space in new development; Incorporation of walkable areas in new development

3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;

- **Action taken:** Ongoing employee carpool program and incentives for public transit; 2010 signing of bike route on Valley Drive, and collaboration with South Bay Bicycle Coalition on efforts to initiate a regional Bicycle Master Plan

4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;

- **Action taken:** Ongoing use of Long Beach program for waste to energy; Waste hauler recovers landfill methane; Development of pilot program to utilize wind turbine technology on City facilities;

5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;

- **Action taken:** City Manager's staff memo to power down computers each night; Ongoing replacement of lighting in city facilities with energy efficiency technologies;

6. Purchase only Energy Star equipment and appliances for City use;

- **Action taken:** Purchase of Energy Star equipment for City Hall

7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;

- **Action taken:** March 2009 Adopted Green Building Standards Ordinance; indefinite extension of solar permit fee waivers

8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;

- **Action taken:** Ongoing purchase of fuel efficient vehicles (including hybrids, electric, and CNG vehicles); 2009 lease of electric Mini-coopers; anti-idling ordinance; Nov 2009 begin use of bio-diesel for diesel fleet

9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;

- **Action taken:** Variable frequency drives (VFDs) and high efficiency motors fitted to frequently used electric motors and pumps at sewer and water pumping facilities

10. Increase recycling rates in City operations and in the community;

- **Action taken:** City is compliant with AB 939 requirements; Increase of public recycling containers; Community-wide battery recycling; and Community-wide Drug Drop Box

11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2; and

- **Action taken:** City planting of drought tolerants in downtown area; Requirement in majority of the City for a new tree to be planted with every new housing project; Public hearings dealing with development projects promote tree planting and use of drought tolerant plants

12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

- **Action taken:** Ongoing energy efficiency classes, Presentations to local schools on climate change, October 2009 outreach to Chamber of Commerce and business district associations, October Energy Awareness month and classes; and Significant community outreach and participation in 350 International Day of Climate Action on October 24, 2009