WORKING TOWARD A GREATER, GREENER

Manhattan Beach

THINK GLOBALLY, ACT LOCALLY: WHAT MANHATTAN BEACH IS DOING TO CARE FOR OUR ENVIRONMENT

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Message from the City Manager

In response to the City Council 2007/08 Work Plan item, I am pleased to present this comprehensive environmental evaluation. In order to prepare this report, I brought together a group of employees and called them the "Green Team," comprised of Police Chief Rod Uyeda, Public Works Director, Jim Arndt, Community Development Director, Richard Thompson, Finance Director, Bruce Moe, and Assistant to the City Manager, Lindy Coe-Juell. I want to thank and congratulate them and their staffs for their time and effort in compiling this Green Book.

Global warming, urban runoff pollution, sustainability, carbon emissions, and the three R's (reduce, reuse and recycle) are all terms we read about in the papers daily. This book furthers our understanding of these issues and how they impact the City of Manhattan Beach, and most importantly, how we can become more proactive in protecting and preserving our environment.

Every resident satisfaction survey conducted by the City has shown beach and ocean cleanliness as our residents' top priority. Clearly our residents have an interest in our environment and our planet.

The purpose of the Green Book is to address the entire environmental spectrum from ocean, water, and air quality to global warming and conservation of resources.

Our first task was to identify and categorize the many environmental programs the City of Manhattan Beach participates in and/or implements. As you will read throughout this report, the City has been environmentally responsive for many years. While we are very proud of our past and current efforts, there is so much more we can accomplish.

Consequently, our next task was to identify opportunities and best management practices that we can consider adopting, thus becoming an even more environmentally sensitive city. As we move forward, some of the new initiatives we've identified may be fairly easy to implement, while others may take additional resources. Still, others may require significant community involvement and political leadership from Council.

The last section of our report is a review of the opportunities for community involvement. Although the City can undertake some initiatives unilaterally, others will clearly need the support of the community. Indeed, the ultimate goal is to not only improve municipal practices, but to lead a paradigm shift in community awareness and action. How well we do this may depend effectively on how we involve residents in our municipal efforts.

Finally, we recognize that this is our initial effort and some ideas and opportunities may not have been identified. As City Council moves forward and sets priorities, and as we implement these programs, we will continue to look for opportunities to be the best stewards of our community and planet resources we can be.

Sincerely,

Geoff Dolan
City Manager

Introduction
Our City

Manhattan Beach, a thriving 3.88 square mile coastal community, is often referred to as the Pearl of the South Bay. Indeed, the people who live and work in Manhattan Beach view this city with a special reverence and work hard to preserve its beauty and charm. Still, the City's focus is becoming more global as we rise to the challenge of preserving more than what lies within Manhattan Beach's borders.

In the 2006 Resident Satisfaction Survey, protecting the beaches and ocean from pollution rated as a resounding priority, with 91% of residents indicating that this was very or extremely important to them in preserving the quality of life in Manhattan Beach. In the spirit of preserving this and other natural resources, and under the direction of City Council, the City of Manhattan Beach has committed to embracing additional measures that will reduce the negative impacts of its operations on the environment.

> Worldwide, increased population growth has created escalating demands on natural resources, caused higher levels of pollution, and negatively affected oceans and polar ice caps.

A Little History...

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
- Preserving the existing green spaces in the City, and encouraging additional landscaping
- Ensuring that we are a pedestrian-oriented community with the greenbelt, walk streets, enhanced streetscapes, mixed-use projects, and sidewalks
- Providing alternative transportation and public transit
- Conserving and protecting natural resources in Manhattan Beach
- 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
- Encouraging the City's franchise trash service to have more recycling programs

- 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

Although these programs are effective and do raise awareness about environmental issues, only a few programs currently include specific pollution reduction goals or hold us accountable in our efforts to protect the environment.

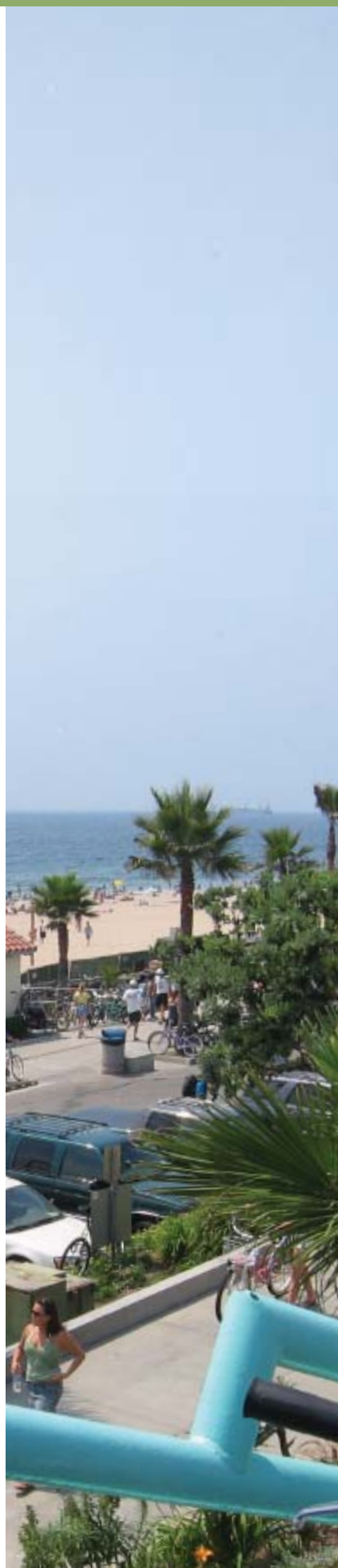
Formation of the Green Team

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 global warming and the need for all cities to reduce greenhouse gas emissions. The City Council directed staff to research the Agreement and report back with their findings. Following this directive, in January, 2007, the City Council adopted a resolution endorsing the US Mayors Climate Protection 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.

Shortly thereafter, in April of 2007, the City Council met to discuss the upcoming 2007/08 Annual Work Plan. At that meeting, the City Council unanimously agreed to direct staff to prepare a report on programs that the City of Manhattan Beach is currently implementing to protect the environment, as well as to investigate and summarize what other cities are doing in this arena. The City Council decided to expand its focus beyond global warming issues to include all of the City's environmental programs and policies, such as water conservation, storm water run off, pollution, urban forests, development, beach protection, and environmentally friendly purchasing.

As a first step, in the summer of 2007 the City Manager formed the "Green Team." This team included the Chief of Police, the Directors of Community Development, Public Works, and Finance, and the Assistant to the City Manager. Over the past several months, the Green Team and their staffs have compiled data on the City's own environmental programs, researched successful programs and best practices implemented in other communities, and developed a list of actions for future consideration by City Council.

We, the "Green Team" of Manhattan Beach, are proud and excited to engage ourselves in this incredibly worthwhile endeavor. We thank the City Council for having the foresight and willingness to choose this exciting path, one that will leave a legacy that benefits not only the people of today, but also the generations to come.



US 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 global warming and making a commitment to take steps to reduce global warming pollution 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 Kyoto Protocol targets, the City has agreed to try to reduce greenhouse gas pollution by taking actions in its operations and communities. These actions include:

- Conducting an inventory of global warming emissions in City operations and in the community, setting reduction targets, and creating an action plan.
- Supporting energy efficiency through retrofitting City facilities with energy efficient lighting and urging employees to save energy which saves costs.
- Increasing the average fuel efficiency of municipal fleet vehicles; launching an employee education program including anti-idling messages; converting diesel vehicles to bio-diesel.
- Practicing and promoting sustainable building practices using the United States Building Council's LEED program or a similar program (see Sustainable Development section).
- Supporting land-use policies that preserve open space and create compact, walkable urban communities.
- Promoting transportation options such as bikeways, commuter trip-reduction programs, incentives for car pooling, and public transit.
- Evaluating opportunities to increase pump efficiency in water and wastewater systems.
- Maintaining healthy urban forests; promoting tree planting to increase shading and absorb CO_2.
- Increasing the use of clean, alternative energy by advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste-to-energy technology.
- Where feasible, increasing recycling rates in City operations and in the community.
- Where feasible, purchasing "Energy Star" equipment and appliances for City use.
- Supporting education of the general public, students, service organizations, businesses, industry and others about reducing global warming pollution.

Working Towards a Greater, Greener Manhattan Beach

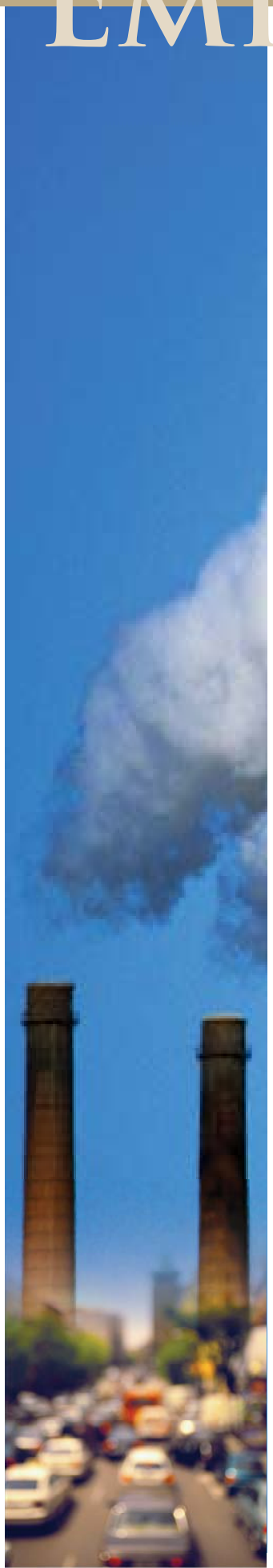
This report is divided into eleven environmental sections. The first part of each section introduces the environmental topic and highlights the environmentally friendly City practices and policies. The next part of each section highlights other notable programs implemented both locally and throughout the nation. The last part of each section identifies programs and practices for future consideration as the City Council and the community decide how to become a greater and greener city.

To give the readers some perspective, each program and practice for future consideration includes a preliminary rating scale identifying its likely costs and ease of implementation. These ratings were subjectively assigned by the Green Team through discussion about initial understanding of costs, and general agreement was reached on the rating for each program and practice.

Cost considerations included equipment, resources, staff time, operations, capital expenditures and other tangible items. Ease of implementation considerations included public acceptance, conflicting environmental concerns, infrastructure, practicality and intangible concepts. Actual cost projections will be worked out as Council decides which programs and practices to pursue.

Cost Rating		**Feasibility Rating**	
$	Little to No Cost	1	Very Easy to Implement
$$	Low Cost	2	Somewhat Easy to Implement
$$$	Moderate Cost	3	Challenging to Implement
$$$$	Costly	4	Difficult to Implement
$$$$$	Very Costly or Cost Prohibitive	5	Extremely Difficult to Implement

Emissions Inventory



In August of 2007, the City Council adopted a resolution in support of the Cities for Climate Protection Campaign. As with the US Mayors Climate Protection Agreement, the City pledged to establish a greenhouse gas (GHG) reduction goal and develop an action plan to achieve that goal.

One of the first steps being taken to accomplish this goal is to calculate greenhouse gas emissions generated from government operations and our community; this is also known as determining our City's emissions footprint. 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 will also use historical data to estimate the City's greenhouse gas emissions released in 1990, information which will 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.

International Council for Local Environmental Initiatives (ICLEI)

To measure our greenhouse gas emissions, The City utilized assistance from the International Council for Local Environmental Initiatives (ICLEI). ICLEI is an international association of more than 600 local governments, with at least 50 members from California, dedicated to the solution of local, regional, and global environmental problems. Through ICLEI, this network of local governments shares knowledge and ideas about how to effectively and cost-efficiently achieve local, national, and global sustainability objectives.

In 1991, ICLEI launched the Urban $C0_2$ Reduction Project. Six North American cities and six European cities were chosen to participate in this pilot project to analyze and quantify their individual greenhouse gas ($C0_2$) emissions and to develop local action plans to help achieve a 20% reduction in emissions. Initial results of the pilot project have shown that these cities have achieved significant energy savings and corresponding financial savings by taking steps to reduce their emissions.

Building on the success of the pilot program, ICLEI recently initiated the Cities for Climate Protection (CCP) Campaign. The campaign, which is partially funded by the Environmental Protection Agency (EPA), promotes local action to reduce greenhouse gas emissions. The campaign also developed a software program which evaluates commonly accessible data for local utilities, electricity usage, natural gas usage, fuel usage, employee commute miles, waste generation, etc. The software program then

generates greenhouse gas emissions estimates based on the data inputted. ICLEI staff provides technical consulting, training, and information services to build capacity, share knowledge, and support local governments in the implementation of sustainable development at the local level.

Climate Protection Campaign Milestones

ICLEI's Climate Protection Campaign also offers cities a five step methodology to reduce global warming pollution.

The five milestones (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.

Milestone 1: Baseline Emissions Inventory

Staff recently completed Milestone 1, a 2005 greenhouse gas emissions inventory for Manhattan Beach's municipal operations. This inventory is the critical first step toward reducing the City's contribution to greenhouse gas emissions because it highlights the largest sources of municipal emissions, identifies trends in emissions, and provides a baseline from which to evaluate the success of future changes. The inventory includes emissions resulting from:

- City owned and operated buildings (including City recreation facilities and parks)
- Municipal fleet fuel usage (includes fuel usage for our contracted services, i.e. trash collection, street sweeping, and landscape maintenance)
- City employee commuting
- Streetlights & traffic signals
- Water, storm water, and wastewater (sewer) pump stations
- Trash generated by City employees at City facilities

Milestone 1

Conduct a Baseline Emissions Inventory

Milestone 2

Establish an Emissions Reduction Goal

Milestone 3

Develop a Local Climate Action Plan to Achieve the Goal

Milestone 4

Implement the Local Climate Action Plan

Milestone 5

Track Progress and Report Performance

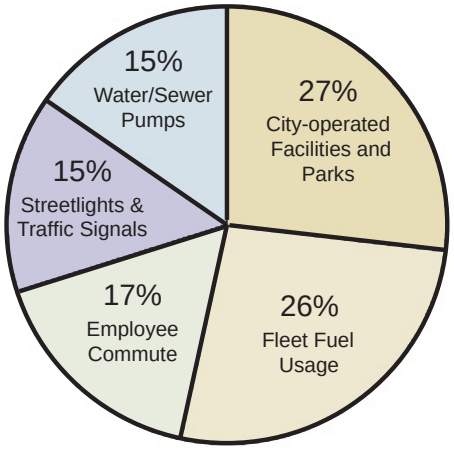
Collectively, operational facilities and parks were the City's top contributors to greenhouse gas emissions in 2005 (e.g., City administration buildings and recreation facilities). Combined, they generated 27% of the City's total CO_2 emissions.

Vehicle fleet fuel usage, which also includes fuel usage for the City's contract services providers, was a close second, generating 26% of the CO_2 released.

2005 Emissions Data*	CO_2 Emissions (in tons)	% of Total 2005 Emissions
City Operated Facilities & Parks	1,680	27%
Vehicle Fleet Fuel Usage	1,646	26%
Employee Commute	1,054	17%
Water/Sewage Pump Stations	961	15%
Streetlights & Traffic Signals	904	15%
Waste (**negligible)	**	< 1%
TOTAL:	**6,245**	**100%**

* Additional 2005 Emissions Data Available in Appendix Two

Other emissions data included City employee commuters at 17%, electricity for water, storm-water, and sewer pump stations at 15% and energy used to power streetlights and traffic signals at 15%.



Another relevant category in the ICLEI software included the emissions generated from solid waste (trash) produced by City employees at City facilities. This was included in the study because landfills release methane into the atmosphere. Although the waste collected within the City is disposed of at landfills located outside the community, Manhattan Beach is still the initial waste generator. However, the City's 2005 waste emissions were negligible because the recipient landfill captured approximately 50% of the methane released and converted it into new, usable energy. Based on the software calculations, the positive energy generated by the methane capture negates the negative CO_2 emissions, resulting in a net zero value for waste emissions.

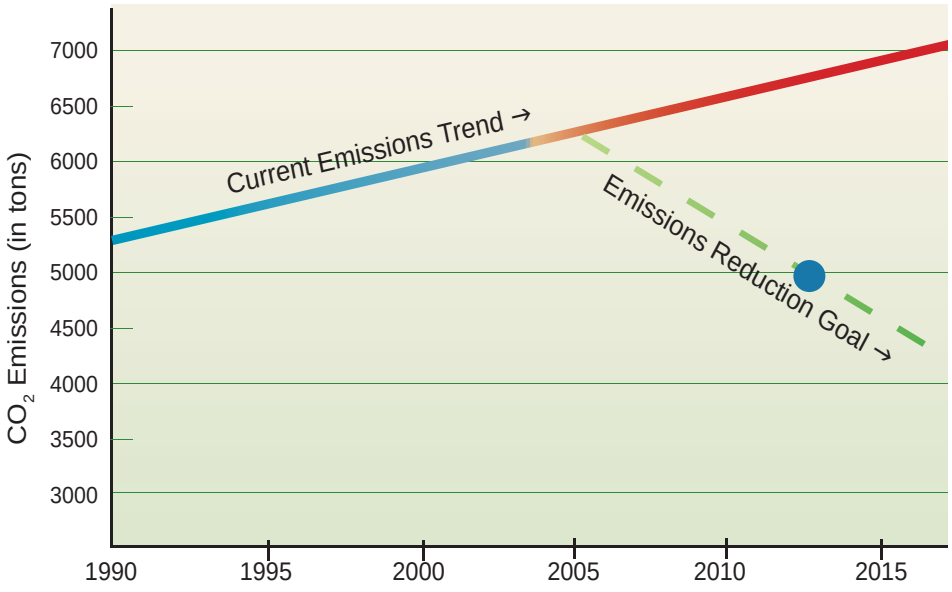
With the baseline emissions inventory data as our guide, we can design short and long term strategies to achieve our GHG reduction target. Additional 2005 CO_2 emissions data can be found in Appendix Two. In the near future, the City can expand the inventory to evaluate community-wide greenhouse gas emissions.

Milestone 2: Emissions Reduction Goal

Using historical data (and estimates where data was no longer accessible), an emissions inventory was conducted for 1990 municipal activities showing a CO_2 output at 5,363 tons. In line with the Kyoto Protocol, we will set a 7% (or 375 tons) CO_2 emissions reduction goal below the 1990 emissions level to be achieved by 2012. This goal also represents an approximately 20% reduction below our 2005 CO_2 emissions.

1990 Emissions Data	CO_2 Emissions (in tons)	% of Total 1990 Emissions
City Operated Facilities & Parks	1,187	22%
Vehicle Fleet Fuel Usage	1,169	22%
Employee Commute	1,022	19%
Water/Sewage Pump Stations	619	12%
Streetlights & Traffic Signals	1,306	24%
Waste	60	1%
TOTAL:	**5,363**	**100%**

The blue line represents actual Manhattan Beach municipal emissions trends from 1990 to 2005. The line fades into red as it becomes a predictor of future government emissions, should we continue to conduct business as usual. The green dashed line represents our City's goal to reduce government emissions to 7% below 1990 levels by the year 2012, and to continue our emissions reduction efforts into the future.



Milestones 3 - 5: Develop, Implement, & Track Our Community Climate Action Plan

With our total emissions reduction goal set at 20% below 2005 levels, the next Milestone in the Climate Protection Campaign is to form a Local Climate Action Plan. The plan to be developed will build on the information gathered in this document and will serve as a road map to attain our emissions reduction target. It should include an implementation timeline for reduction measures, cost and financing mechanisms, assignments to City departments, and a community involvement plan. As explained in the Community Involvement section of this document, it is suggested that a newly formed environmental committee or commission be developed to play a large role in the creation, implementation, and tracking of the Local Climate Action Plan.

Lastly, as mentioned in the Introduction, this document serves as the precursor to the City's overall environmental action plan. It 1) highlights the emissions and other pollution reduction efforts currently in place in Manhattan Beach, 2) reviews best management practices implemented by other organizations, 3) identifies future actions for consideration, and 4) explores opportunities for community involvement.

Energy Usage
City Facilities

A large share of fossil fuel use is dedicated to providing the electricity that powers almost all aspects of our daily lives. Embracing energy efficiency programs offers one of the best ways we can reduce our reliance on the pollutants that contribute to global warming.

City Programs & Policies

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 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.

Based on the results of the collected data, several changes were implemented, which included:

Retrofitting & Replacing Lighting Fixtures

More than ten years ago, the light fixtures in all City facilities were upgraded to be more energy efficient. 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.

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 new motors and drives not only save energy, but because the rotation speed can be variably controlled, they allow for more exacting control schemes.

Updating Heating, Ventilation, and Air Conditioning Systems

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.

Since the Honeywell study, the City has continued its commitment to control energy costs and conserve resources. Efforts include:

- Replacing a 1973 City Hall boiler with an energy efficient pulse combustion gas model with an electronic starter
- Reducing use of fluorescent light fixtures by 25% in many areas
- Installing lighter-colored flooring and wall coatings to reflect light, enhance existing lighting, and reduce thermal loads
- Installing rotary timers, photocells, and occupancy sensors in lieu of standard wall switches to automatically turn off lighting and HVAC when areas are not in use in the Public Safety facility

Designing the Public Safety Facility with Energy Conservation in Mind

The new Public Safety Facility employed several newer technologies to achieve energy efficiency, including design criteria specified by LEED (see the Sustainable Development section for more information). 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. For example, adding more or larger windows and skylights may decrease the need for electrical lighting, but the resulting transmission of sunlight may increase the need for air conditioning. Edison's software simulation helped the City determine which design alternatives would achieve maximum energy savings over the long term.

Southern California Edison sponsors an incentive program which encourages the design and construction of energy efficient buildings in California.

This program helps to offset or subsidize the incremental higher cost to purchase and install high efficiency motors, lighting, and HVAC.

Programs & Practices for Future Consideration

City staff recently evaluated the viability of a "Phase II" energy retrofit program. The initial report indicated that most of the easily addressed energy saving measures have already been implemented. Additional measures worthy of consideration are:

Increase use of energy-efficient lighting

Consider retrofitting existing light ballasts to accommodate modern T-5 fluorescent fixtures, which are more energy efficient, offer better color rendering, and have a longer life than the T-8 fixtures currently used. Evaluate installation of task lighting to reduce the need for overhead lighting.

Cost: $$ Feasibility Rating: 1

Install daylighting controls and occupancy sensors

Daylighting controls and occupancy sensors are newer technologies incorporated in the Public Safety Facility and they may prove cost-effective to install at other city facilities. Daylighting Controls utilize sensors to measure ambient light levels and reduce electrical lighting levels as natural lighting varies throughout the day. Occupancy sensors turn lights on and off based on motion detection and infrared sensors, reducing energy usage by automatically turning lights off when a room is unoccupied.

Cost: $$ Feasibility Rating: 1

Improve central building management and monitoring

There are available services and technologies that manage building operations 24/7, providing on-site as well as remote controlled heating, cooling, and lighting. Occupancy based sensors can also be incorporated into these systems, further promoting energy savings and efficiency.

Cost: $$$ Feasibility Rating: 2

Reduce energy consumption from appliances and other electronic devices

Collectively, the appliances, computers and other electronic devices used by employees at City facilities consume a tremendous amount of energy. Taking simple steps, such as turning off computers and monitors daily, using central refrigerators, adjusting thermostats, and eliminating individual heaters will help move us toward our total energy consumption reduction goals.

Cost: $ Feasibility Rating: 2

Consider solar power applications

We are currently evaluating the use of solar panels and photovoltaic arrays on City facilities. The power generated from the panels would offset traditional facility energy usage. Active and passive solar water heating systems are also being evaluated. While the capital cost for these types of installations can be expensive, rebates and incentives can often reduce the initial investment.

Cost: $$$$ Feasibility Rating: 1

Consider supporting the development of green sources of energy

Currently, Southern California Edison is the only electric utility serving Manhattan Beach, and thus we are committed to using the energy they provide regardless of how or where it is produced. However, the City can participate in and support the development of green sources of energy through the Renewable Energy Credits (RECs) program. In simple terms, the REC program is a subsidy program that encourages electricity users to contribute monetarily (i.e., to buy credits) toward the development and expansion of greener sources of power (e.g., wind, solar, biomass, etc.) such that it is more readily available in the future. Renewable energy credits are not reimbursed to the City to offset its own future energy consumption, nor does it reduce the cost of the electricity currently used by the City.

Because the movement to deregulate the electric industry failed several years ago, the City is precluded from purchasing electricity from any other source other than Southern California Edison. However, it may be possible again some day to have direct access to electricity generators themselves, and as a result, purchase and consume energy generated from green power sources. In the meantime, Edison as well as other non-municipal providers are required under State law to provide 20% of their power from renewable sources by 2010. According to Edison's website (www.sce.com), the company currently provides 17% of its power from renewable sources.

The cost of one REC, which represents one megawatt of electricity, varies widely depending on such factors where, what type and when the power is generated. For example it costs $5.00 for one REC of biomass energy, $7.00 - $10.00 for wind energy, $8.00 - $9.00 for geothermal energy, and $25.00 to $50.00 for solar power energy. As a point of reference, the City consumed approximately 6,000 megawatts of electricity in 2005. If the same amount of RECs were also purchased, the approximate additional cost to the City would be $30,000 to $300,000 per year.

The prices above are for certified power. Certification ensures that the power was generated within certain criteria. Green-e is the nation's leading independent certification and verification program for renewable energy producers and companies that use renewable energy. For more information, visit their website at www.green-e.org.

Cost: $$ Feasibility Rating: 1

Many of the proposed technologies will require cultural change. The acceptance of wider environmental variance in buildings can save considerable amounts of energy. For example, less overhead lighting, increased task lighting, and minor thermostat adjustments can all have a dramatic impact on energy use.

Vehicle Fleet and Fuel Usage

The transportation sector (i.e., cars and light trucks) is the second largest source of CO_2 emissions in the United States and represents about 20% of total US emissions. Using alternative fuel vehicles can help reduce the CO_2 emissions that contribute to global warming.

City Programs & Policies

Greenhouse gas emissions released from the City's fleet and contractor vehicles amount to more than 26% of our total municipal emissions. As part of the City's continued efforts to operate in an environmentally friendly manner, a number of steps have been taken to reduce emissions. These include:

Purchasing Fuel-Efficient Vehicles

Presently, 13% of the City's fleet runs on alternative fuel, including nine compressed natural gas (CNG) fueled vehicles, four hybrid vehicles, two electric vehicles, and three propane vehicles. Of the remaining 87% of the City's fleet, 14% use diesel and 86% use gasoline. A poll of ten area cities showed that their fleets have anywhere from 1% to 17% alternative fuel vehicles, with the exception of those that have their own liquid natural gas (LNG) fueling stations. This data suggests that our fleet composition is fairly representative of the region.

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. However, vehicles that require utility boxes are currently purchased with traditional gasoline powered engines because CNG fuel tanks are located in the cargo area, effectively cutting usable cargo space by 50%.

Fuel Emissions

Emissions resulting from fuel usage, as a percentage of total city government CO_2 emissions:

City Fleet Fuel Usage

Gasoline	15.4%
Natural Gas	0.4%
Diesel	3.3%

City-Contracted Service Providers

Waste Management (Solid Waste Disposal)

Natural Gas	0.0%
Diesel	4.2%

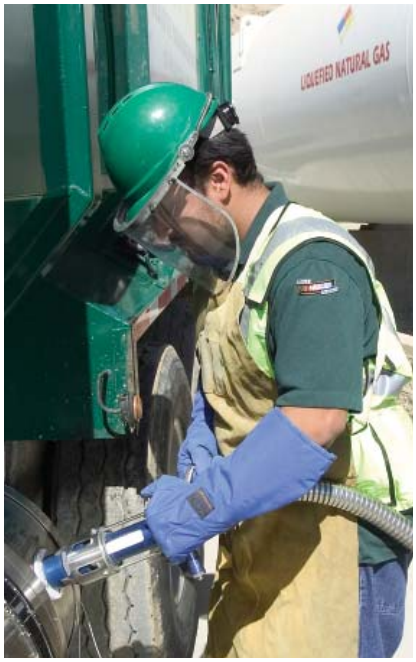
Clean Street (Street Sweeping)

Diesel	1.1%
Liquid Propane	0.1%

TruGreen (Landscape Maintenance)

Gasoline	1.5%
Diesel	0.3%

Total City Gov't Emissions **26.3%**
(resulting from fuel usage)



Routinely Servicing Vehicles

We continue to meet all state and local smog/emissions requirements and monitor fuel usage to ensure proper performance and fuel economy.

Reducing Vehicle Emissions

Most of the City's diesel trucks are outfitted with particulate traps which reduce the release of particulate matter into the air by over 90% and carbon monoxide (CO) and hydrocarbon (HC) emissions by 80%. Furthermore, the City encourages a 30-second maximum idling policy. If the vehicle is left unattended or parked for more than 30 seconds, the driver should turn the engine off.

We also evaluated the fuel consumption of our contract service providers in our emissions analysis. This includes Waste Management for trash & recycling, CleanStreet for street sweeping, and Tru Green for landscaping. The region's local air pollution control agency, the South Coast Air Quality Management District (SCAQMD), has established a number of standards and policies which govern these service providers. Waste Management is in compliance with SCAQMD Rule 1193, mandating that all refuse vehicles be in use for less than ten years, and also in compliance with the Air Resource Board's emission standards for refuse removal vehicles. Currently, Waste Management operates eleven trash trucks in the City, eight fueled with liquid natural gas and three with ultra low sulfur diesel. The diesel vehicles are outfitted with exhaust particulate traps. In compliance with SCQMD 1186.1, CleanStreet sweepers run on alternative fuel, specifically propane. The City's landscape contractor does not have any fuel restrictions at this time.

Advances in alternative and blended fuels will continue to allow us to still meet service demands while finding green alternatives.

Other Notable Programs

Ultra low sulfur diesel and CNG are the most common types of alternative fuel used by local cities, and a small number have begun using bio diesel. Santa Monica and Long Beach have installed LNG fueling stations to reduce their emissions.

E85 Fuel

Conversion to E85 fuel instead of regular gasoline is being considered by some cities. This fuel is 85% ethanol and 15% gasoline. Due to the high ethanol content, it burns cleaner than gasoline and is a domestically renewable fuel. It can also be used in standard gasoline vehicles. At this time, however, it is not readily available. According to United States Department of Ecology, there are only three E85 fueling stations in California, with a fourth in the planning stage. This fuel is very corrosive and requires special fuel pumps at a cost of about $30,000 per pump. It also requires a dedicated fuel tank, for which there is currently no room at the City Maintenance Yard. Lastly, there are no after market parts that have been certified by the EPA to meet the standards to maintain clean exhaust emissions.

Hydrogen Fuel

Although hydrogen fuel is environmentally friendly, the cost of the initial infrastructure and vehicle conversion is significant. Hydrogen fueled vehicles cost about $100,000 each and installing a hydrogen fueling station costs about $1,000,000. Still, there is a great deal of research being conducted in this area and it may in fact become a viable future alternative.

Bio-diesel

Bio-diesel is a domestically produced, renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant greases. Bio-diesel is biodegradable, and reduces serious air pollutants such as particulates, carbon monoxide, hydrocarbons, and air toxics. Blends can generally be used in unmodified diesel engines, and it can also be used in its pure form. This may require certain engine modifications to avoid long term maintenance and performance problems. Notably, Chevrolet and Ford are taking a cautious approach to the percentage of bio-diesel that is recommended and can be safely used without impacting mechanical and/or warranty issues. So far, 5% bio-diesel is the maximum allowable by these manufacturers. The City of Santa Monica and Inglewood currently use bio-diesel at higher percentage blends. The City of Torrance is also testing this fuel type and is considering converting some of its fleet.

Liquid Natural Gas (LNG)

The most environmentally friendly alternative to diesel would be the conversion of diesel fueled trucks to LNG. It is a clean burning fuel; however, LNG is not readily available locally, but rather is trucked from Arizona. To make using LNG economically viable, the City would need to install a 12,000 gallon above ground fuel tank at a cost of approximately $1,000,000 and use at least 9,000 gallons every two weeks to prevent the fuel from degrading and reverting to its gaseous state. Even though this would be a best practice environmentally, space for the station is not available at the City's Maintenance Yard and the City's fleet would not be able to use this amount of LNG every two weeks.

Compressed Natural Gas (CNG)

Compressed natural gas is clean burning, readily available fuel. The City has nine CNG vehicles and will be adding one more this budget year. The City also has a small fueling station at the maintenance yard which has been very dependable as an on-site source for CNG. With the addition of more CNG vehicles, the City will need to expand its CNG holding capacity by adding another compressor and more storage tanks.

Electric Vehicles

Electric vehicles can perform to meet City needs, although most electric vehicles available have a limited range between charges (making them less useful). However, new technology has improved the driving range to more than 100 miles between charges with a total battery life of 250,000 miles. A vehicle with this technology will be on the market in 2008 at a retail cost of $45,000. Not surprisingly, a waiting list to purchase this vehicle has been established by the manufacturer.

Programs & Practices for Future Consideration

Continue to replace traditional vehicles with alternative fuel types

As vehicles are replaced, consideration will be given to converting a majority of the Public Works, Recreation, and Community Development vehicles to alternative fuel. Some vehicles in the Police and Fire departments will also be analyzed to see if their use would allow alternative fuels. A realistic goal would be 75% alternative fueled vehicles within the next ten years. This goal can be accomplished by:

- Replacing all sedans and SUV's with hybrid models (please visit the Procurement Policies section for hybrid lifecycle cost analysis)
- When possible, replacing gasoline powered pickups and utility trucks with CNG
- Replacing diesel fueled trucks with LNG when it becomes more readily available
- Purchasing only CNG powered busses for the Dial-A-Ride program
- Evaluating vehicles used by the Police Community Service Officers to determine if there is an electric or hybrid vehicle that could replace the Go-4 models
- In the future, requiring greater use of LNG fueled vehicles in the refuse contract
- Requiring the City's landscape contractor to meet and/or exceed SCAQMD standards for clean, on-road, light and medium-duty public fleet vehicles
- Considering purchasing vehicles that have the capability to accept blended fuels for future use

Because alternative fuel technology is rapidly changing, it would not be prudent to accelerate the replacement the City's fleet beyond the normal replacement cycle. Replacing City vehicles as part of a normal cycle gives the City the opportunity to continue to embrace the best technology available. For example, electric vehicle technology is continuing to improve and there may be City activities that would be extremely compatible with 100% electric vehicles. Ultimately, a feasibility and cost-benefit analysis will need to be conducted to determine the compatibility of each type of alternative fuel vehicle purchased and its function within the City.

Cost: $$ Feasibility Rating: 1

Consider more stringent requirements than those identified in SCAQMD Rule 1193

When the refuse and street sweeping contracts come up for renewal in three years, the City can consider imposing more stringent emissions requirements than those identified in SCAQMD 1193.

Cost: $$ Feasibility Rating: 1

Create a regional alternative fueling station

While building and maintaining a permanent alternative fueling station is not financially practical for Manhattan Beach to do alone, pooling resources with other local South Bay cities to create a regional fueling station may be feasible and is worth investigating.

Cost: $$$$$ Feasibility Rating: 4

Consider using bio-diesel in City fleet vehicles with unmodified diesel engines

With minimal cost increase, we can test the effectiveness of bio-diesel at a blended rate of 5%, and we can consider increasing the percentage following an assessment of the vehicles' maintenance needs and performance.

Cost: $$ Feasibility Rating: 1

Alternative fuel City vehicles:

Public Works CNG truck
Police Department CNG car
Hybrid car (opposite page)

Traffic Controls and Streetlights

Traffic lights operate 24 hours per day while streetlights operate on average 12 hours per day. Combined, they consume a significant amount of energy resources and thus contribute to global warming – nearly 15% of our total City government emissions result from powering these lights. By using more energy efficient lighting in these devices, we can reduce their impact on the environment.

City Programs & Policies

Traffic Controls

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 typical incandescent traffic light uses 70 to 90 watts per light during operation, whereas LED lights use approximately 7 to 10 watts. The expected lifespan of LED lights is estimated to be seven years. Red and green bulbs experience the longest power "on" during a traffic cycle, so these are the primary targets when considering cost effective change-outs. Amber bulbs are the least cost effective and are replaced with LED clusters only when installing completely new signal heads or when the original lighting fails.

In addition to reduced energy and maintenance costs, another substantial benefit gained by using LED lighting is that LED traffic signals can be fully operated by a battery back up system (BBS) in the event of a power outage. The LED signals will continue to function during a power outage for a minimum of two hours in full run-time operation and a minimum of four hours in red flash mode run-time operation. In the summer of 2002, the City was awarded a state matching grant through the California Energy Commission for the purchase of the battery backup systems in order to maintain safe traffic movement through the City's intersections during a power failure. The grant, along with City matching funds, allowed us to install battery back up systems on all 27 LED retrofitted traffic signals throughout the City.

The City also employs five solar powered school crossing warning beacons. These self contained devices consist of a solar panels, storage batteries, and LED lamps. The low power use of the LED bulbs works well in this application, as the warning beacons are only operational during school hours.

Streetlights

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.

High Intensity Discharge (HID) Light Types

High pressure sodium
Low pressure sodium
Metal halide
Mercury vapor

The high intensity discharge (HID) family of lights is the most efficient and heavily used, and include high pressure sodium (HSP, the most efficient), followed by metal halide and then mercury vapor. However, HID lights do have some limitations. Many electric lamps, HPS among them, do not produce full spectrum light (i.e., low color rendering index, or CRI) and are not used where a more natural looking light is desirable. Some public safety agencies have raised concerns about the difference in color rendition properties of low CRI lighting and suggested using either color corrected HPS or metal halide lighting to aid in routine police duties because good color rendition is important for both suspect and vehicle identification. Metal halide lamps produce light with a higher CRI, which most people perceive as more aesthetically pleasing due to more accurate color rendition. Sports field lighting is exclusively metal halide, as color rendition is critical for both the safety of the players and the games themselves.

Ultimately, the tradeoff is evaluating energy efficiency against lighting acceptability; both HSP and MH types are used in the City.

Programs & Practices for Future Consideration

Upgrade all traffic signals with LED or equivalent lighting

Replace all traffic signal lighting with LED equivalents, including using LED bulbs in pedestrian walk/don't walk signals. Retrofitting existing pedestrian signals will also allow for additional improvements, such as the installation of pedestrian countdown timers (which is also a safety enhancement).

Cost: $$ Feasibility Rating: 3

Expand the Intelligent Traffic Corridor Program

Work with CalTrans and the County of Los Angeles Department of Public Works to expand the Intelligent Traffic Corridor (ITC) program, the next generation, synchronized traffic flow system. Well timed signals along major thoroughfares improve traffic flow, which in turn result in lower emissions and reduced fuel consumption when compared to thoroughfares with poorly timed signals.

Cost: $$$ Feasibility Rating: 2

Reassess City street lighting needs

Reassessing the City's street lighting needs should, at a minimum, include:

- Performing a street lighting survey citywide and maintaining an up-to-date database of lighting types and ages. Many lamp types lose their light output efficiencies over time while still drawing full power). Mass re-lamping at specified points in the life cycle will save energy over the long term.
- Identifying all mercury vapor lighting and replacing them with metal halide or high pressure sodium lamps. Replace older lamps of all kinds with newer versions which exhibit higher CRI value and efficiencies as they come to market.
- Reevaluating acceptable CRI values and luminosity levels. Consider energy conservation as a dominant factor in determining appropriate lighting and brightness.
- Performing a lifecycle cost-comparative analysis and evaluating the viability of currently available, solar lighting systems and technologies for use in streetlights.

Cost: $$ Feasibility Rating: 1

Explore lighting alternatives for the Gas Lamp District

In lieu of gas, consider retrofitting gas lamps in the City's gas lamp district with more efficient lighting alternatives while maintaining the charm and ambiance provided by the lamps themselves. The Clean Air and Climate Protection software estimates that a single gas lamp emits approximately six times more CO_2 emissions than a high pressure sodium streetlight, the type overwhelming used throughout the City. The gas lamp district is located in the sand section of the City, predominantly between 20th Street and 23rd Street. Residents here are assessed annually on their property tax bill to pay for the gas used in the lamps themselves. For this reason, any proposed changes will likely require input from the affected residents.

Cost: $$ Feasibility Rating: 4

Sustainable Development

Sustainable development focuses on designing buildings that are designed to significantly reduce or eliminate the negative impact they have on the environment and on the people who occupy them. Buildings account for 48% of energy consumption and greenhouse gas emissions in the United States. By encouraging and requiring green building techniques, they can become more efficient, reduce consumption of energy, water, materials, and ultimately reduce their impact on the environment.

Green building design and construction practices address site planning, water quality, energy efficiency, conservation of materials and resources, and indoor environmental quality.

Manhattan Beach is primarily a residential community, consisting of 70% residential and 30% commercial, recreational, public and other uses within its 3.88 square mile jurisdiction. Although considered built-out, the City is a desirable place to live and work, and therefore residential, commercial, and mixed-use construction activities continue to be strong.

City Programs and Policies

Over the past two decades, the City has had few opportunities to construct new public facilities. The Police/ Fire Facility and Metlox are two high profile development projects recently completed. Still, the City continues to support construction of environmentally friendly public and private buildings and community development projects which include:

Environmentally Friendly City Facilities

The new Police and Fire Facility, recently completed in 2006, was designed by a "Leadership in Energy and Environmental Design" LEED certified architect. The facility also integrated facets of Southern California Edison's "Savings by Design Incentive Program" and incorporated other sustainable design concepts (see Other Notable Programs below). It earned LEED credits for various

In addition to the information included in this section, many of the steps we have taken to make our existing City buildings more environmentally friendly are highlighted throughout this report, specifically in Energy Usage at City Facilities, Water Usage and Conservation, Transportation and Parking, and Procurement Policies.

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.

As a result of construction of the Police Fire and Metlox projects, the newly built segment of 13th Street between Morningside Drive and Valley Drive provided the perfect location for a Farmers Market. The outdoor market provides organically grown produce and other related merchandise. Local residents are able to walk to the market each week for fresh fruits and vegetables, reducing automobile trips to the supermarket. The market also provides local farmers with a venue to personally sell their produce, avoiding the traditional transportation necessary to supply regional markets, which also results in reduced emissions.

Through a comprehensive study, the Facilities Strategic Plan currently being prepared will determine the community's recreational needs and subsequent facilities needs for years to come. If approved, this will provide us opportunities to replace outdated public buildings with more energy efficient buildings.

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. The City also encourages residents to consider remodeling rather than rebuilding their homes, thereby reducing their negative impacts on the environment.

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. Construction activities in this City are active and on-going, with many homes under renovation and over 130 new homes constructed annually. For this reason, efforts to reduce construction waste, encourage use of recycled and eco-friendly building materials, and encourage green building practices can have a profound effect on our community's environmental well-being. Additional information on construction debris recycling can be found in the Solid Waste and Recyclables section of this report.

Solar Water Heating

The Municipal Code currently requires solar water heater plumbing stub outs for new homes in order to accommodate future solar panels. State Law encourages the use of solar panels by exempting them from certain local regulations. Solar heating can provide approximately one third of hot water needs, reduce CO_2 emissions and reduce use of electricity and gas.

California Energy Code

The California Energy Code requires new residential and commercial construction to conserve energy by installing energy efficient devices, including lighting, heating, air conditioning, plumbing, insulation, windows, and doors.

Several projects in Manhattan Beach have voluntarily exceeded these minimum requirements and have included "extras," such as geo-thermal heating and cooling, smart homes with automated electricity, water-conserving landscaping, photovoltaic solar panels for electricity, and "green roofs", which are planted with vegetation.

Permeable Driveways

Permeable driveways are used for residential as well as commercial projects as they have many benefits, which include reducing contaminated storm water runoff, allowing for additional natural infiltration and expanding green space.

Recycled Water Use at Car Washes

The full-service car wash businesses in the City use recycled water to rinse off soap and debris from the vehicles utilizing their services. The wash water leads to a filtration system which allows re-use, while the rinse and waxing systems use fresh water.

Pedestrian-Oriented Environments

In addition to Manhattan Beach's current Zoning Code criteria, the City has adopted development guidelines for its Downtown commercial area and the Sepulveda Blvd. Corridor. These guidelines include goals to promote a pedestrian friendly environment and to maintain/enhance landscaping and the streetscape.

Downtown Design Guidelines

The three goals of the Downtown Design Guidelines are to preserve the "village" character, preserve and enhance the pedestrian orientation, and provide attractive landscaping, sidewalks and streetscape amenities, which encourage people to get out of their cars and walk. The Guidelines address the following:

- **Site Design:** Buildings on primary street frontages should be located immediately adjacent to sidewalks, except for areas that may be setback to accommodate outdoor dining, and other uses that are publicly accessible.
- **Vehicle Parking and Access:** Large public parking lots scattered throughout Downtown provide convenient long-term parking. Driveways located on alley frontages conserve short-term on-street parking
- **Pedestrian Activity:** Well-defined entries at street-facing building elevations should be used to facilitate public access.

Green Roof Benefits:

- Reduces traditional roof maintenance
- Reduces heating and cooling requirements
- Provides additional sound insulation
- Retains storm water, reducing runoff
- Improves air quality

"Smart House" Design Features:

- Automated mechanical shading
- Hydronic space heating
- Electric light sensors

GREEN BUILDING

The area's large, consolidated public parking lots also offer convenient parking for those who come to shop, dine, visit, and work in the Downtown area, and the mixed-use projects and businesses serving residents and visitors serve a variety of needs to consolidate driving trips to Downtown.

Sepulveda Corridor Guidelines

The Sepulveda Boulevard Development Guide establishes a development improvement strategy for the City's primary commercial corridor and addresses traffic, aesthetics and other issues. Its' goals are similar to the Downtown Design Guidelines, although the scale of the corridor is much larger. Pedestrian oriented spaces with pedestrian friendly access and building orientation are key elements, as well as sidewalks which also allow safer pedestrian access. The Guide also promotes shared vehicular access between adjacent properties to improve circulation and parking, as well as reduce hardscape. Landscape standards encourage green spaces, which can reduce contaminated storm water runoff, increase percolation and provide natural shading and cooling.

Remodeling Rather than Rebuilding

The City has adopted zoning regulations that encourage homeowners to remodel and improve their existing smaller homes rather than tearing them down and building new homes that often maximize a home's footprint and square footage. Maintaining the existing, smaller homes can decrease consumption of natural resources, as there is less space to heat, cool and light. Additionally, a home with a smaller footprint often means increased water percolation, reduced storm water runoff and increased landscaping. Remodeling, rather than demolishing and rebuilding, is likely to generate less construction debris, as well. However, older homes are often less energy efficient than newer homes and that is one of the trade-offs that should be further examined. Further revisions to the City's current Zoning Codes are being considered that would allow more flexibility in the regulation, thereby encouraging even more homeowners to remodel rather than rebuild.

A Culturally Significant Landmark provision was recently adopted which encourages existing homes and mature trees to be retained and preserved. These regulations recognize properties of cultural significance without depriving property owners of their rights to develop. The designation process is voluntary and acknowledges the historical status and unique architectural design of individual properties in the community. The City Council also established the formation of a Landmarks Task Force to increase public awareness and appreciation of the City's cultural heritage. A landmark home built in 1937, with approximately 1200 square feet is pictured above.

"Green Building" home features:

- "Energy star" appliances
- Environmentally friendly material
- Hidden photovoltaic solar panels
- Recycled denim insulation
- Tankless water heater

Permeable driveway benefits:

- Reduces polluted runoff
- Increases landscaping

Other Notable Programs

Several local cities have exemplary sustainable building programs, including Santa Monica, Pasadena, and Burbank. Many of these cities have incorporated education, green building rating systems, and incentives into their programs.

Santa Monica requires that all private and public new development projects reduce or eliminate the amount of storm water runoff from properties through best management practices, such as permeable pavement, green roofs, and porous driveway and sidewalk pavers.

Burbank has mandatory prerequisites, such as required recycling of construction debris as well as voluntary LEED compliance levels. Education about these programs is disseminated through workshops, certification programs, public meetings, handouts, consultant advisors, and websites.

Santa Barbara promotes the use of bio-swales to filter pollutants and decrease runoff and erosion.

There are several green building rating models. Two of the most common and widely accepted models are: 1) the "Leadership in Energy and Environmental Design" (LEED) Green Building Rating System for commercial and public buildings, which is a national model, and 2) the "Build It Green" GreenPoint Rating System for residential buildings, which is used in the State of California. Both systems promote a "whole-building" approach to sustainability by incorporating sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. The models provide the necessary tools for building owners to document and measure impacts on building performance by incorporating a checklist which is used by the design professional. The checklist assists the design professional by assigning points for various green building components, some of which are identified below. It is inherently flexible because it allows design professionals and building owners to develop tailored solutions using multiple design options.

Both the LEED and Build It Green checklists are updated regularly as industry standards change and green building features become more common. Each of these systems is also well established, tested, and accepted throughout the design profession.

Examples of green building categories for which credits or points are given:

- Increasing waste diversion
- Replacing Portland cement in concrete with recycled fly ash
- Installing high-efficiency irrigations systems, such as low-flow sprinklers and "smart" controllers
- Using Forest Stewardship Council certified wood studs and timber
- Installing high-efficiency toilets
- Installing Energy Star appliances

Other incentive programs include the Energy Star program through federal guidelines and rebates, Gas Company rebates, SCE rebate programs, and SCE new home programs. Rebates are available for Energy Star appliances, such as clothes washers, dishwashers, refrigerators, room air conditioners, and furnaces. The Gas Company also provides some rebates for natural gas water heaters and boilers and energy efficient ducted evaporative cooling systems.

Programs and Practices for Future Consideration

Embrace sustainable construction practices for public facilities

Ensure that new and major renovations of public buildings conform to minimum standards of the green building rating systems, and consider requiring that only LEED-certified architects be used for all public building projects.

Cost: $$$ Feasibility Rating: 1

Consider a three-pronged program to promote sustainable development

To integrate environmentally friendly building practices in Manhattan Beach, consider a three-pronged program which includes education, incentives and legislating compliance.

1. Utilize appropriate educational opportunities

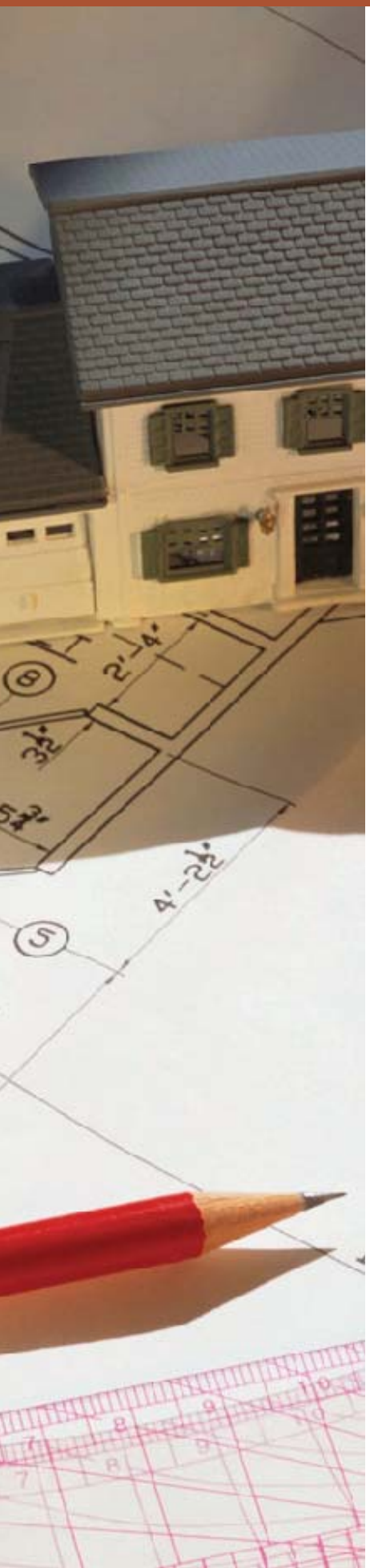
A culture of sustainability should be instituted for regulating private property development, one that begins with and is reinforced over time through education. At the onset of the program, educating City staff should be a priority. It should be followed by providing information to the community at large. This education process will require an ongoing commitment of time and resources.

Cost: $$$ Feasibility Rating: 1

A. Implement outreach programs

There are numerous avenues available to proactively educate both staff and the community about sustainable development. These include:

- Workshops provided by the South Bay Cities Council of Governments (SBCCOG) and the South Bay Energy Savings Center (SBESC)
- City outlets such as public meetings, the Construction Community newsletters, the City website, and the library
- News media, such as the Daily Breeze, Beach Reporter, Easy Reader, and local cable television stations
- Existing community forums, such as the Manhattan Beach Botanical Garden organization at Polliwog Park and Volunteers and Organizations Improving the Communities' Environment (VOICE)



B. Promote residential and commercial sustainable building techniques

Private construction projects can implement sustainable construction techniques, and the measures need not be cost prohibitive to improve a building's sustainability. Simple and inexpensive methods include:

- Insulating hot water pipes
- Installing simple heat traps at the inlet and outlet of water heaters
- Using caulk and insulation that are formaldehyde-free or contain low volatile organic compounds (VOCs)
- Providing water and electrical stub outs to the roof for future solar water heating
- Increasing the required minimum for construction and demolition debris recycling (see also the Solid Waste and Recyclables section)
- Reducing or limiting storm water runoff (see also the Storm Water Management section)

2. Evaluate and adopt appropriate incentives

Consider ways to promote voluntary green building by providing incentives such as expedited plan review, reduced fees, or monetary rebates. This is similar to what other cities and/or their utility providers offer when construction projects attain minimum levels of sustainability as verified through programs like LEED and Build It Green. As mentioned above, incentives also include existing rebate programs such as Southern California Edison's (SCE) Saving by Design Program, the federal Energy Star program as well as numerous other SCE and Gas Company rebate programs.

Cost: $$$ Feasibility Rating: 3

3. Legislate Compliance

Consider requiring that certain types of buildings be built to specific environmental standards, and consider adopting new code amendments to enforce those standards. For example, the City could require that certain projects be designed by a LEED certified Architect and attain one of four different levels of certification; "Certified," "Silver," "Gold," or "Platinum." This is commonly done for public and commercial buildings over a certain size. The requirement can also be applied to large multifamily residential projects. The City could also consider adopting the "Build It Green" program, which is more suited to single family homes. It also has multiple levels of certification and compliance similar to the LEED program.

Cost: $$$ Feasibility Rating: 3

Examples of code amendments that would promote green building:

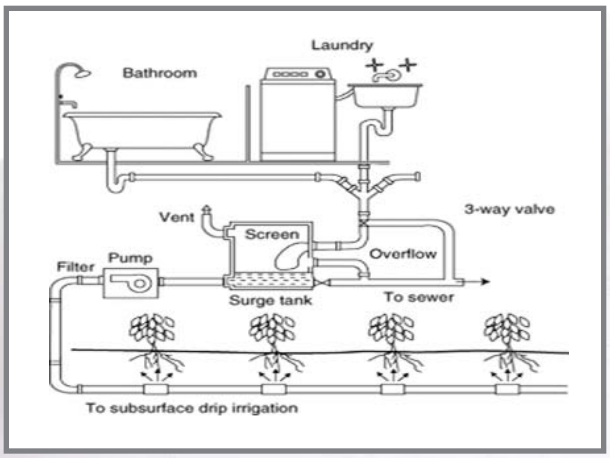
- Allow vehicle charging equipment and tankless water heaters within garages in locations that do not impact parking.
- Allow solar panels to be installed over the existing height limits in conformance with State laws.

- Require the installation of permeable pavement such as "grasscrete" and recycled materials for driveways, patios, and walkways on private property as well as in the public walkstreet "encroachment areas to increase percolation and decrease runoff.
- Revise City's standards for parking, setbacks and open space for residential and commercial development to encourage more mixed-use developments which decreases vehicular trips.
- Revise landscape standards to include: 1) increased landscaped areas, 2) more trees on new construction sites, 3) use of native and/or drought tolerant plants 4) use of low flow sprinklers and "smart controllers" 5) bio-swales when appropriate, and 6) investigating additional opportunities to use reclaimed water.
- Require the use of graywater systems for irrigation where feasible.

Promote residential use of graywater systems

Graywater systems effectively reduce potable water demands. Gray water systems also:

- Recycle water from bathtubs, bathroom sinks, and clothes washers
- Reduce the amount of wastewater discharged to the public sewer system
- Provide subsurface irrigation, thereby reducing water costs



The plumbing code allows graywater irrigation for residential properties, and it should be encouraged by the City in certain situations.

Cost: $$$$ *Feasibility Rating: 4*

Promote the capture and use of rainwater for commercial landscape irrigation

Where feasible, promote methods that capture and retain rainwater on site, allowing it to be used later to irrigate landscaping. This measure can reduce potable water demands and help eliminate contaminated storm water runoff from reaching the storm drain system.

Cost: $$$$ *Feasibility Rating: 3*

Transportation and Parking

Providing alternative modes of transportation encourages the community to choose options other than driving alone, like bicycling, walking, carpooling or riding the bus. Increased use of alternative modes of transportation can reduce traffic congestion as well as the vehicle emissions that contribute to global warming.

City Programs & Policies

The City has implemented many programs and projects to reduce vehicle trips within the City, promote the use of alternative transportation and provide more efficient use of parking facilities. Our efforts include:

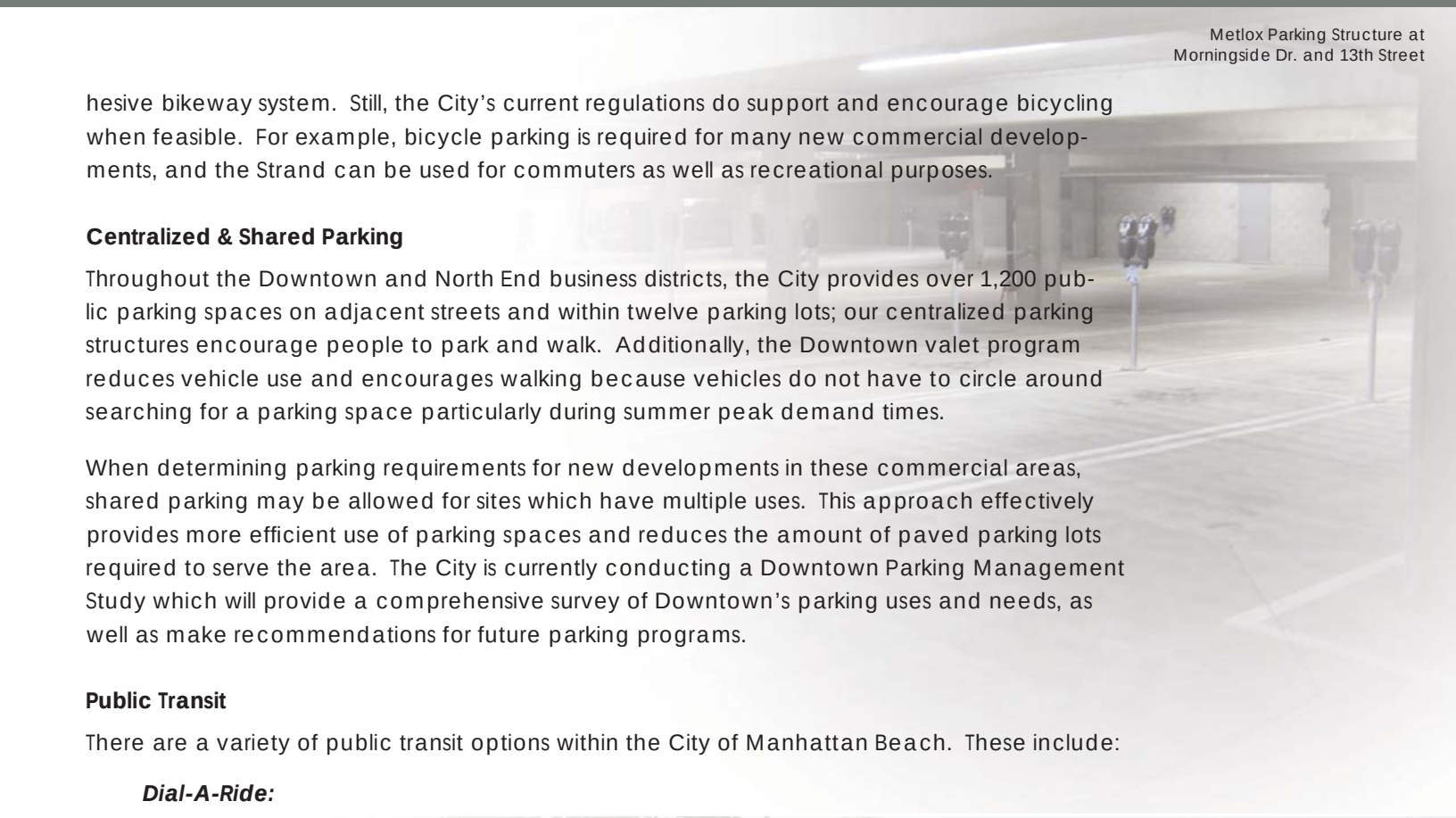
Pedestrian-Friendly Areas

The mixed-use Downtown and North End business districts provide pedestrian friendly urban environments, making it convenient to walk to shops, eat, play and conduct business. Downtown streetscape features provide more landscaping, and protective curbs bulb-outs and decorative crosswalks which enhance pedestrian safety, calm or slow traffic and encourage walking. Likewise, the North End Business Improvement District (BID) is developing a streetscape improvement plan to encourage more pedestrian activity in the area.

The City maintains pedestrian routes, such as walkstreets, the Strand's walkway and bikeway, neighborhood and commercial sidewalk systems, and Veterans parkway, to provide pedestrian friendly and vehicle-free ways to travel within the City. We also work with schools to develop "Walk to School Programs", which provides safe routes for students to use in getting to and from school. Lastly, the City Council's Work Plan includes a Pedestrian Walking Program and calls for staff to implement programs and consider incentives to encourage walking throughout Downtown and within each school area.

Bikeways

The City conducted a comprehensive bikeway study last year to evaluate the needs, wants and opportunities related to bicycles as a form of alternative transportation. One key finding of the study was that most people in the community utilize bikeways for recreation purposes rather than for commuting to and from work. The study also found that there are significant challenges in providing new bike lanes throughout the City because many of our streets are too narrow to provide safe bike lanes while maintaining street parking. Additionally, there are few direct routes to provide a co-



Metlox Parking Structure at
Morningside Dr. and 13th Street

hesive bikeway system. Still, the City's current regulations do support and encourage bicycling when feasible. For example, bicycle parking is required for many new commercial developments, and the Strand can be used for commuters as well as recreational purposes.

Centralized & Shared Parking

Throughout the Downtown and North End business districts, the City provides over 1,200 public parking spaces on adjacent streets and within twelve parking lots; our centralized parking structures encourage people to park and walk. Additionally, the Downtown valet program reduces vehicle use and encourages walking because vehicles do not have to circle around searching for a parking space particularly during summer peak demand times.

When determining parking requirements for new developments in these commercial areas, shared parking may be allowed for sites which have multiple uses. This approach effectively provides more efficient use of parking spaces and reduces the amount of paved parking lots required to serve the area. The City is currently conducting a Downtown Parking Management Study which will provide a comprehensive survey of Downtown's parking uses and needs, as well as make recommendations for future parking programs.

Public Transit

There are a variety of public transit options within the City of Manhattan Beach. These include:

Dial-A-Ride:

The City offers a low-cost Dial-a-Ride service to seniors and disabled residents for transportation anywhere within the City of Manhattan Beach, as well as to medical facilities and shopping destinations. The City Council's 2007/08 Work Plan calls for addressing senior transportation, reviewing the effectiveness of the current Dial-A-Ride program, and considering the expansion of existing service and other alternative forms of transportation for seniors. Proposition A funds also provides supplemental funding for senior bus passes.

The Ocean Express Trolley:

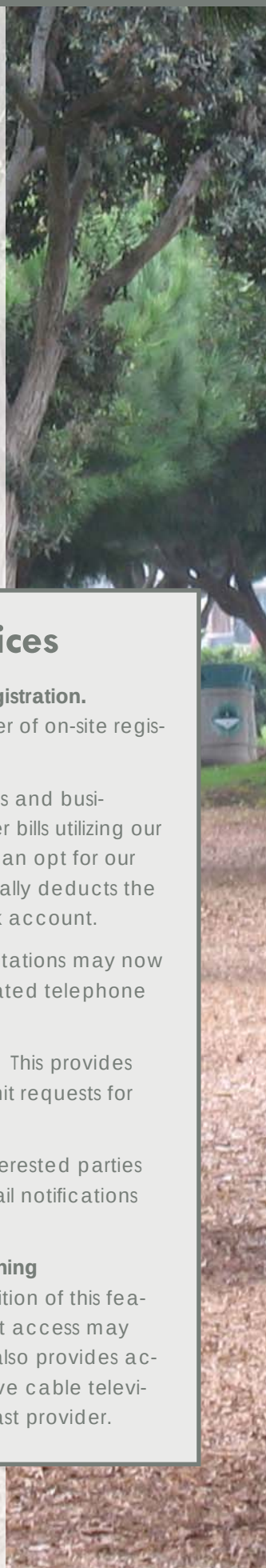
This is a free service connecting the hotels on Century Boulevard near the airport with Downtown Manhattan Beach and the Manhattan Village Shopping Center. Over 60,000 visitors used this trolley last year, substantially reducing the number of rental car and cab rides to Manhattan Beach.

Beach Cities Transit:

Beach Cities Transit provides community-based by linking Downtown Manhattan Beach, Downtown El Segundo, the Metro Aviation Greenline Station, and the Airport City Bus Center.

Other Regional Transit Systems:

Municipal Area Express, MAX, is a commuter bus service specifically designed to address the commuting needs of South Bay residents who work in the El Segundo employment center. Los Angeles County Metropolitan Transportation Authority, or MTA, provides public transportation in Los Angeles County with 200 Metro Bus lines and four Metro Rail lines throughout the County. And, the Los Angeles Department of Transportation LADOT's Commuter Express links South Bay commuters to the Downtown Los Angeles Financial Center.



Although there are alternative transportation options for students to get to and from school, the lack of school buses within the City adds to traffic congestion on primary routes and in the areas surrounding schools. Due to a lack of consistent transportation alternatives, many parents drive their children to school, and many high school students drive to school as well.

Employee Rideshare Program

The City offers financial incentives to employees to take alternative forms of transportation to work. Carpooling, walking, biking and public transportation all qualify as alternate transportation modes that reduce vehicle trips.

Virtual City Hall

With the recent upgrade of the City's website, we have enhanced our ability to continually service residents without requiring them to come into City Hall to complete transactions. The City's website allows residents, businesses and guests to interact with us without the constraints of normal business hours. Ultimately, the online services result in fewer car trips to City Hall, which in turn reduces fuel consumption, traffic congestion and air pollution. Additionally, paper consumption is reduced because forms can be filled out and submitted electronically.

As we continue to enhance our website, we will be adding more online services, such as electronic bill summaries, business license applications and building permits.

Traffic Flow Issues

The City Council's 2007/08 Work Plan calls for addressing traffic concerns along the main arteries of the City, reviewing signal light synchronization, reviewing the possibility of changing parking restrictions on Sepulveda Boulevard, and completing school area traffic studies. These measures will keep vehicular traffic flowing more efficiently, which in turn reduces air pollution and congestion.

Stop Signs

The City Council must approve all stop signs before they are installed. A number of factors are considered before a sign is approved including safety, accident history and neighborhood traffic issues. However, increasing the number of stop signs can have negative environmental consequences, such as restricted traffic flow, increased stop-and-go driving, and increased idling, all of which increase CO_2 emissions.

Online Web Services

- **Parks and Recreation online class registration.** This program has reduced the number of on-site registrations at City Hall by over 50%.
- **Water Bill Payment Options.** Residents and businesses can pay their refuse and water bills utilizing our online "water web" service, or they can opt for our "auto pay" feature which automatically deducts the amount due from the designed bank account.
- **Online Parking Citation Payments.** Citations may now be paid online or through an automated telephone system.
- **Citizen Request Management (CRM).** This provides residents with an opportunity to submit requests for service through our website.
- **Email notifications.** Residents and interested parties may subscribe to any number of email notifications for City events and activities.
- **Streaming video of Council and Planning Commission meetings.** With the addition of this feature, anyone with high speed Internet access may view live or archived meetings. This also provides access to those residents who don't have cable television or have satellite as their broadcast provider.

Farmers Market

A weekly farmers market is staged Downtown on 13th Street between the Police/Fire facility and Metlox Town Square. The outdoor market provides organically grown produce and other related merchandise. Local residents are able to walk to the market for fresh fruits and vegetables, resulting in reduced automobile trips to the supermarket. The market also provides local farmers with a venue to personally sell their merchandise, thereby avoiding the need to transport their merchandise to regional markets.

Other Notable Programs

Many notable programs designed to reduce traffic, promote pedestrianism and encourage alternative transportation are being implemented by other cities both locally and nationally. For example:

- Cities such as Long Beach, Santa Monica, El Segundo, and San Luis Obispo provide shuttle systems within their commercial zones, downtown and/or citywide.
- The Cities of Los Angeles, Torrance and El Segundo provide vehicle recharging stations for electric cars. For example, in the City of Los Angeles a charging station is provided in the parking lot at the Westchester Public Library.
- Bike racks on public and private property are either provided or required in cities throughout California.
- Street furniture and benches which promote pedestrian-friendly areas are seen in many vibrant downtown areas, such as Menlo Park, Palo Alto, Santa Barbara and Monterey.
- The Cities of Long Beach and Los Angeles have high daily parking rates, which encourages people to plan ahead, carpool, use public transit to reduce the total number of trips for errand purposes.
- Cities such as Palo Alto, Stanford and Davis provide comprehensive bikeway systems as an alternative form of transportation, encouraging people to ride their bikes rather than drive.
- Telecommuting policies that effectively reduce employee travel to and from work are implemented throughout California. Additionally, all 15 South Bay cities other than Manhattan Beach and Palos Verdes Estates have alternative work schedules, with many City Halls closed on alternate Fridays.
- The cities of Long Beach and Downey provide transit hubs/stations as a way to consolidate resources and shorten public transportation travel times.
- Some California cities, such as Brentwood, San Jose, Mariposa and Elk Grove, prohibit drive-thru lanes in certain areas of town. Drive-thru prohibitions have also been considered in Carlsbad and Norco to reduce idling vehicles, which then reduces air pollution.

Programs & Practices for Future Consideration

Staff has identified a number of ways that Manhattan Beach can reduce emissions and positively affect the environment. These include:

Encourage parking for fuel efficient vehicles

The City Council should consider: 1) providing free parking for fuel efficient vehicles, 2) requiring electrical outlets in both public and private parking lots for charging electric vehicles, and 3) allowing substandard parking spaces for smaller more fuel efficient vehicles such as electric vehicles and motorcycles.

Cost: $$ Feasibility Rating: 2

Consider implementing an alternative work schedule

Consider alternative work schedules and telecommuting policies to save building energy and reduce employee vehicle trips. Many cities and private employers throughout the country, as well as the Los Angeles region, have implemented alternative work schedules. They provide a number of community, employee and employer related benefits. These include:

- *Reducing traffic congestion and associated emissions.* Employees utilizing this schedule commute to work earlier and later than the peak commuting periods, which helps to reduce overall traffic congestion. Research shows that vehicles emit substantially more air pollution per mile when driven in congested traffic than at other times.
- *Expanded business hours.* The public can conduct City business beyond the standard 8 a.m. to 5 p.m. business day.
- *Greater job satisfaction among employees.* The results of multiple surveys conducted before and after implementation of an alternative work schedule show that employees have greater job satisfaction, increased morale, and increased productivity with an alternative schedule in place.
- *Improved recruitment and retention rates.* Alternative work schedules are appealing to the work force; they reduce commuting travel time, save on gasoline, and provide a larger block of extra personal time at home. Combined, these benefits are becoming a more significant factor in the retention of existing employees and recruitment of new employees.

Of the 15 cities in the South Bay Council of Governments, only Manhattan Beach and Palos Verdes Estates do not have alternative work schedules. The most commonly used model in the South Bay is the 9/80 schedule, in which a full-time employee works 9 hours per day for eight days and 8 hours for one day in a biweekly period, thus getting an extra day off once every two weeks. South Bay Cities are typically closed every other Friday. Most employers either add an hour to the end of the work day, for business hours of 8 a.m. to 6 p.m., or add a half hour on both sides of the work day, for business hours of 7:30 a.m. to 5:30 p.m., during the 9-hour workdays.

Cost: $ Feasibility Rating: 3

Increase parking fees

Consider increasing daily parking rates as an element of the current Downtown Parking Management Study, which may result in reducing the total number of vehicular trips.

Cost: $ Feasibility Rating: 4

Prohibit drive-thrus

Consider prohibiting drive-thrus, particularly in areas that are not on major thoroughfares or are adjacent to residential areas, to reduce vehicular emissions and air pollution. The Downtown and the North End areas may be appropriate locations to consider these restrictions.

Cost: $ Feasibility Rating: 3

Promote pedestrian walking program

As part of the current 2007/08 Work Plan, consider expanding the Pedestrian Walking Program and the Walk to School Program to encourage walking throughout Downtown and within each school area, and to provide safe routes for students and bicyclists to and from schools.

Cost: $$ Feasibility Rating: 1

Expand transit services

Consider expanding existing transit services and other alternative forms of transportation, particularly for students and seniors.

Cost: $$$$ Feasibility Rating: 2

Review stop sign criteria

As mentioned earlier, the City Council reviews and makes a final decision on requests for new stop signs. Because an increased number of stop signs can increase CO_2 emissions, the City could consider environmental impacts as additional criteria when evaluating requests for new stop sign installations.

Cost: $ Feasibility Rating: 4

Water Usage and Conservation

In Southern California, we live in a semi-arid climate, and rainfall is rarely plentiful. Because the threat of a fresh water shortage is real, conservation initiatives are critical and must be embraced to protect this region's precious water supply.

City Programs & Policies

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.

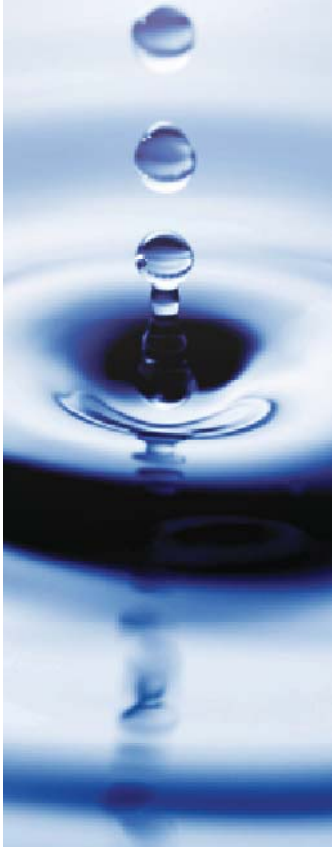
Our water supply includes a combination of potable (96.4%) and non-potable (3.6%) water. The majority of the potable water used, nearly 84%, is supplied by the Metropolitan Water District (MWD), while two City wells supply the balance. The City pumps water from its wells when there is a price advantage over the rates charged by MWD, although the District's water supply rates are generally less when ample supply is available.

Manhattan Beach has water rights to pump up to 1100 acre-ft/year from its wells, which can meet approximately 17% of its daily usage demand

The City's demand for water has varied over the years, from a low of approximately 155 gallons per capita per day (GPCD) in 1991/92 to 184 GPCD in 2000/01. Overall, the data shows that the demand has remained relatively stable at approximately 180 GPCD since 1993/94, although some spikes have occurred. For instance, the City's water demand increased slightly in 1996/97 and may have been the result of a combination of factors including the leaf blower ban and a relatively dry rainy season.

Additional water demands have primarily been met by increasing the use of reclaimed water where feasible, thereby stabilizing the amount of MWD water imported. Lastly, the City has adopted an ordinance which places restrictions on water usage in the event of a water shortage or drought.

Water conservation efforts implemented by the City have included installation of waterless urinals in some City facilities, constructing the new Fire facility to be able to capture and reuse water in its training exercises, promoting city-wide water conservation programs on its website, providing links to MWD and West Basin Municipal Water District websites, and conducing educational outreach at events such as Earth Day and the Hometown Fair.



The City has also modified its parks and median irrigation systems to better manage water use, and upgraded some landscaping with native and more drought tolerant plants. See *Urban Forests and Beaches* for more details on the City's irrigation and landscaping efforts.

Other Notable Programs

Both locally and throughout the nation, municipal water suppliers have implemented rate-based incentive programs to encourage water conservation. By creating tiered rates structures based on total household water usage, water suppliers have made it more expensive to use above average amounts of water. Such programs have had a dampening effect on usage and have been effective in working toward conservation.

Many cities and water suppliers also promote water conservation through public education avenues such as websites, events and publications. These outreach programs help educate residents about simple steps that can be taken to conserve water, such as:

- Installing low-flow water devices in the house (e.g., toilets, shower heads)
- Limiting water use by not leaving water running and taking shorter showers
- Choosing native and drought tolerant plants in landscaping
- Modifying irrigation practices to minimize runoff and evaporation.

Locally, the Metropolitan Water District and West Basin Municipal Water District provide excellent water conservation information on their websites, www.bewaterwise.com and www.westbasin.org, respectively. They also implement rebate programs to encourage residents to use more water efficient appliances.

Cost of Potable & Non-Potable Water

Currently, the City charges $1.59 per 100 cubic feet (approximately 748 gallons) for potable water, regardless of the total amount used in each household.

The City's non-potable, reclaimed water comes from the West Basin Water Recycling Facility in El Segundo, and costs on average one-third less than potable water. It is used to irrigate many of the City's parklands and roadway medians. Although available year round, the heaviest demand for reclaimed water is during the dry season, typically May through September.

Perhaps the most comprehensive local water conservation program is conducted by the City of Santa Monica, which has an overall goal of reducing its water usage by 10% from its 1990 levels. Some of Santa Monica's program components include:

- Providing assistance to residents on how to adjust or change their sprinkler systems.
- Requiring that low-flow, energy efficient appliances be retrofitted on all residential building remodels, new construction projects and when properties are sold.
- Adopting a strict water use ordinance which assesses fines for conservation violations of the code.

Lastly, using reclaimed water is becoming more popular and is now widely used throughout Los Angeles County. This is evidenced by the fact that the region's largest wastewater treatment plant, Hyperion, has over the last nine years grown to provide approximately 20 million gallons per day of reclaimed water to end users for parks/medians irrigation, as salt water intrusion buffers, for cooling tower uses, and for indoor, non-potable plumbing purposes.

Programs & Practices for Future Consideration

Reduce potable water demands

Set goals to reduce the overall amount of residential potable and non-potable water used. To assist in this effort, perform an irrigation audit of all City facilities and activities.

Cost: $$ Feasibility Rating: 3

Increase reclaimed water usage

Investigate where additional opportunities exist to use reclaimed water, evaluate the potential impact on reducing potable water usage, and determine whether those opportunities would be cost effective and/or realistic to implement. Areas for consideration may include the golf course as well as parks and medians not already using reclaimed water for irrigation.

Cost: $$$$ Feasibility Rating: 1

Using reclaimed water on the City's golf course would reduce our potable water demand by 17 million gallons per year

Adopt water conservation measures

Consider the following actions to improve the City's water conservation efforts:

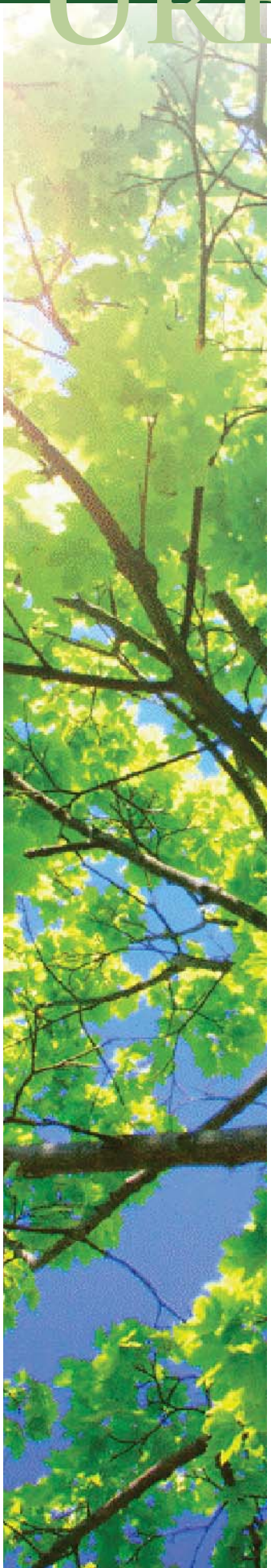
1) Revise the City's Water Use and Conservation Ordinance to more closely monitor water use.
   Cost: $$$ Feasibility Rating: 2

2) Adopt a tiered rate structure based on higher unit costs for increased water usage.
   Cost: $ Feasibility Rating: 3

3) Expand City services that provide education and financial incentives to save water, such as acting as a resource for landscaping and home irrigation audits.
   Cost: $$$ Feasibility Rating: 1

4) Convert high use, water intensive athletic fields to synthetic turf where reasonable costs benefits can be achieved.
   Cost: $$$$$ Feasibility Rating: 1

Urban Forests and Beaches



Trees, parks, and beaches - they are among our most cherished assets here in Manhattan Beach. Trees and parks are good for the environment, filtering air, water, and sunlight while consuming harmful emissions and releasing oxygen. As for our beach, protecting and preserving this natural resource always rates near the top of our resident surveys.

City Programs & Policies

Manhattan Beach's beautiful weather, and the resulting impact of high use on its more than 100 acres of parks and open space, pose a number of interesting challenges as staff balances maintenance needs with user expectations. 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.

In our parks and green spaces, Manhattan Beach currently employs many sustainable maintenance practices, which include:

- Employing central irrigation systems which automatically calculate evaporation rates, temperature, and other factors to increase or decrease the irrigation water released daily. Currently, Marine Sports Park, Marine Ave Park, Veterans Parkway, and City Hall are on this system. Frequent monitoring and adjustment of irrigation systems within City parks and grounds reduces the volume of overspray and irrigation runoff. The use of computerized central irrigation control linked to a local weather station adjusts irrigation schedules per demand. Modern controls can halt the system if water flow exceeds set rates through remote sensors.

Reclaimed Water Used for Irrigation

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. These locations include:

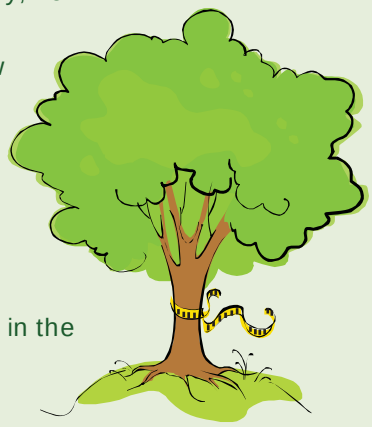
- Marine Ave Park
- Marine Sports Park
- Live Oak Park
- Polliwog Park
- Veterans Parkway
- Marine Ave Medians
- Begg Field
- Manhattan Beach Intermediate School
- Mira Costa High School
- Pennekamp Elementary School

- Using reclaimed water to irrigate larger parks and open spaces to reduce demand from the City's potable water resources. However, using reclaimed water for horticultural has some limitations. There are substantial amounts of chlorides (salt) and other dissolved minerals contained in reclaimed water, and some plant species are sensitive to them. In areas of poor percolation, there is a tendency for the minerals to accumulate in the soil column. The buildup of these minerals can have detrimental effects on the landscape. Fortunately, Manhattan Beach enjoys sandy soils and the problems encountered have been few.
- Practicing Integrated Pest Management (IPM - the science of combining plant selection, horticultural practice, and the judicious use of chemicals in a synergistic fashion for maximum effect); and selecting pest resistant plants to reduce or entirely eliminate the need for chemical pest control. For instance, the City no longer plants eucalyptus, certain pine species, hibiscus, or myoporum due to introduced pests that require chemical control. As natural or introduced biological controls become available, the plant palette can be revisited.
- Practicing proper horticultural processes that reduce or eliminate the need for chemicals and promote tree health, such as trimming eucalyptus trees only in the winter while boring insects are dormant.
- Utilizing spot application weed control, instead of broadcast application, and using the least toxic chemicals available. Chemical use is not allowed in tot lots or dog run areas.
- Mulching the Veterans parkway with on-site generated wood chips; also mulching heavily to reduce weeds, water use, and fertilizers.

Protecting the Tree Canopy in Manhattan Beach

The Tree Preservation Ordinance was originally adopted in 1993 and expanded in 2003 throughout all residential areas of the City except the beach areas. The ordinance, which applies to front and street side yards, preserves and protects trees, requires large replacement trees when trees are removed and requires new trees for new construction projects where no tree currently exists.

By preserving and enhancing the existing tree canopy throughout the City, these regulations provide shade, erosion control, counteract pollutants in the air and strive to maintain the climatic and ecological balance. Additionally, new landscaping, including trees, is required for new residential as well as commercial development Citywide. Trees can be designated as a landmark if they are one of the largest or oldest species in the City.



The City has established a citizen Tree Committee as an educational resource to assist residents by providing information on proper tree pruning and care and encouraging the preservation of the City's tree canopy.

Turf is the largest user of water in any park or athletic field setting and provides a unique challenge to keep green while delivering good playing surfaces for user groups. At times, our horticultural practices are in direct conflict with a field's intended or desired use. Field users prefer consistent playing surfaces and closely mowed fields, which increases the speed of play. However, closely cropped fields increase the mechanical stress on turf and increase evaporation, thus increasing water use. Currently, dedicated athletic fields are more closely mowed, while turf-based street medians and park spaces are mowed less frequently to reduce water usage.

All clippings generated by mowing operations are recycled on site through the use of mulching mowers. The finely cut blades settle back into the turf and return nutrients to the soil, further eliminating the need for nitrogen fertilizers.

During FY 2006/07, a contract was awarded for the construction of the Manhattan Village Soccer Park Synthetic Turf Field Project. The newly completed project is the first artificial turf playing field in Manhattan Beach built by the City. The artificial turf is a special carpet placed over a high percolation rate base. Its surface is filled with recycled tire rubber and creates a consistent playing surface while reducing maintenance labor and eliminating the need for fertilizer, pesticides, or irrigation. The base and its drainage system are designed to reduce or completely eliminate storm water runoff, thereby reducing pollutant loads and nuisance flows from recreational areas. The playing surface itself is maintained via dry methods (vacuuming and/or mechanical grooming).

Manhattan Beach has also implemented proactive measures to ensure that our beach and its gateway, the Strand and pier, are clean and maintained. This includes: 1) providing more than 70 trash cans along the Strand, at the pier, and in adjacent parking lots, 2) routinely street sweeping the Strand, 3) creating alcoves along the Strand to eliminate obstacles for the sweeper trucks and 4) adopting a "No Smoking" ordinance which bans smoking on the beach. Because over one million beach-goers deposit an estimated 580,000 lbs. per year of waste in this area alone, the City is in the process of installing recycling containers near the beach using funds provided in part by the State of California, Department of Conservation. About 10% of that waste is considered recyclable.

Manhattan Beach has taken many steps to prevent storm water pollution and further protect our beaches and ocean. Our efforts are highlighted in the Storm Water Management section of this report.

Programs & Practices for Future Consideration

Perform a water audit; consider contracting water management services

Perform a detailed water audit that evaluates slope, soil type, percolation rates, and sprinkler head type. Areas that are underperforming can be budgeted for rehabilitation and upgrade, and a cost/benefit analysis can be performed to gauge inclusion into a central irrigation system or fitted with stand alone "smart" controls. Perform a cost/benefit analysis of contracting out water management services to specialty firms through remote connectivity and site monitoring.

Cost: $$$ Feasibility Rating: 1

Select more drought tolerant plants

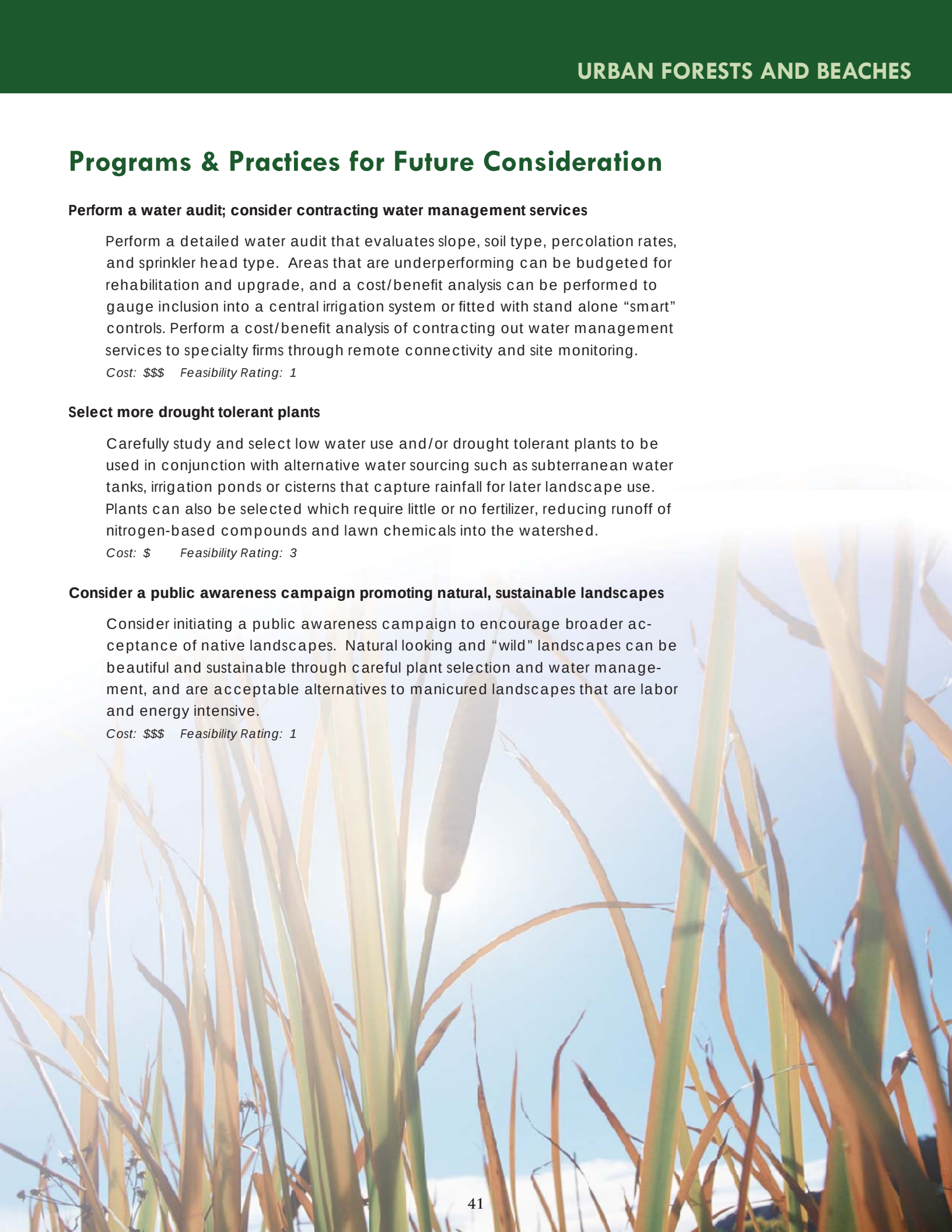
Carefully study and select low water use and/or drought tolerant plants to be used in conjunction with alternative water sourcing such as subterranean water tanks, irrigation ponds or cisterns that capture rainfall for later landscape use. Plants can also be selected which require little or no fertilizer, reducing runoff of nitrogen-based compounds and lawn chemicals into the watershed.

Cost: $ Feasibility Rating: 3

Consider a public awareness campaign promoting natural, sustainable landscapes

Consider initiating a public awareness campaign to encourage broader acceptance of native landscapes. Natural looking and "wild" landscapes can be beautiful and sustainable through careful plant selection and water management, and are acceptable alternatives to manicured landscapes that are labor and energy intensive.

Cost: $$$ Feasibility Rating: 1



Solid Waste and *Recyclables*

While raising awareness about and encouraging recycling is desirable, preventing the generation of waste in the first place can have a profound affect toward protecting the environment. Waste prevention is much less expensive and saves far more nonrenewable resources than recycling or reusing.

City Programs & Policies

Waste collection programs provided by the City of Manhattan Beach both encourage and make it easy for residents, businesses, and employees to properly dispose of the waste they generate through daily activities. The City's waste collection programs include: 1) convenient, curbside collection services for both recyclable and non-recyclable waste as well as green waste, 2) recycling containers placed in public venues throughout the City (e.g., City Hall, The Strand, Downtown), 3) public education about proper waste disposal, including household hazardous waste, and 4) how to manage and dispose of construction-related debris and waste.

Solid Waste

In general terms, solid waste refers to garbage, refuse, and other discarded solid materials resulting from residential and commercial activities. More commonly, it is called "trash." This type of waste is transported by the City's current waste hauler, Waste Management, to local landfills for direct burial. No portion of the residential and commercial solid waste collected in Manhattan Beach is separated for recycling. Instead, the City administers a separate recycling program (discussed

California State Legislation: AB 939 & 2449

In 1989, the California State Legislature passed Assembly Bill (AB) 939, known as the Integrated Waste Management Act, to address the increasing waste stream and decreasing landfill capacity problem facing California. This legislation mandated that jurisdictions meet a diversion goal of 50% by the year 2000 and established an integrated framework for program implementation, solid waste planning, and solid waste facility and landfill compliance. The City of Manhattan Beach is in compliance with AB 939.

On July 1, 2007 AB 2449 was put into effect, requiring large grocery stores in California to accept clean, used plastic carryout bags and offer reusable bags for purchase. AB 2449 "sunsets" in 2013 and will no longer be required by the state.

below) and encourages the separation of recyclables prior to trash collection. The City's residential and commercial solid waste collection programs are administered under separate guidelines, which are outlined here:

Residential Waste Collection

Due to the area's narrow streets, 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.

The City's waste collection fees are some of the lowest in the region, and are determined by the number of residential dwelling units on each property. For example, one single family unit (property) pays $13.25 monthly, while two dwelling units on a single property pay roughly double that amount. However, the City's residential monthly rates are independent of the amount of trash produced. Because there is no rate difference associated with container sizes or number used, a rate-based incentive program to recycle does not currently exist in Manhattan Beach.

In Manhattan Beach, commercial businesses disposed an average of 33,335 pounds of trash each to landfills in 2004. This amount decreased by approximately 15% to 28,335 pounds per refuse account in 2006.

Commercial Waste Collection

The City administers a slightly different waste collection program for its commercial businesses, which 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. Like residential services, landfill waste collection fees are applied to each unique business establishment rather than singularly to an entire parcel. Also, each business may have to facilitate its own collection schedule based on its needs.

Waste Management also conducts an Operation "Snap Shot" Program, which assists in auditing commercial properties for proper bin size, use, and frequency of collection. During collection, if a Waste Management (WM) driver sees a commercial container filled above the rim, or if the business placed excess waste outside the container for pick-up, a digital photo of the overflow is taken. Waste Management then issues a courtesy letter with the photo informing the business of the overage and advises the business to adjust its collection service immediately to better meet its needs and avoid future overage charges. If there is a second infraction, WM issues the business a second letter and adds an overage fee to its refuse bill. This program encourages businesses to restructure their trash service, increase recycling, and create a cleaner business district.

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 & Community Recycling

As legislated under AB 939, at least 50% of the annual waste generated by residents, businesses and operations in Manhattan Beach must be recycled. In 2006, the City diverted 54% of its total waste stream to recycling, the success of which was achieved through a series of programs. In 2006, each resident recycled an average of 839 pounds of waste, about 14% more than in 2004. As mentioned above, residents receive free, unlimited recycling containers and weekly curbside collection. Residents can commingle their paper, glass, plastic and metal recyclables. Additionally, each residential dwelling is entitled to three free bulky-item/E-waste pick-ups per year (up to 9 items in total).

The City has also recently upgraded and/or provided new recycling containers at City Hall Plaza, the Joslyn Center, in the Downtown district, and at the weekly Farmer's Market. Additional recycling containers will be placed along the Strand and at the pier and its adjacent parking lots using a $70,000 grant award from the Department of Conservation.

To educate Manhattan Beach children on the importance of waste reduction, the City provided reusable canvas lunch bags and reusable water bottles to all children and staff participating in the 2007 summer programs. Approximately 1,000 canvas bags were decorated as part of an art project funded through the Department of Conservation City/ County Payment Program.

Commercial Recycling

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. As stated above under Solid Waste, commercial waste collection fees are structured in a manner that encourage businesses to recycle because the City provides free, unlimited collection services for recycled materials. Waste Management also conducts educational site visits about recycling to the City's local businesses.

In 1970, a 23 year old U.C.L.A. student named Gary Dean Anderson entered a nationwide artwork contest along with 500 others to create a symbol that would represent the process of recycling paper.

The contest was hosted by The Container Corporation of America (CCC), who chose Gary's symbol and awarded him a $2,500 scholarship. Over the past 37 years, his design has become the universal symbol for recycling.

Household Hazardous Waste

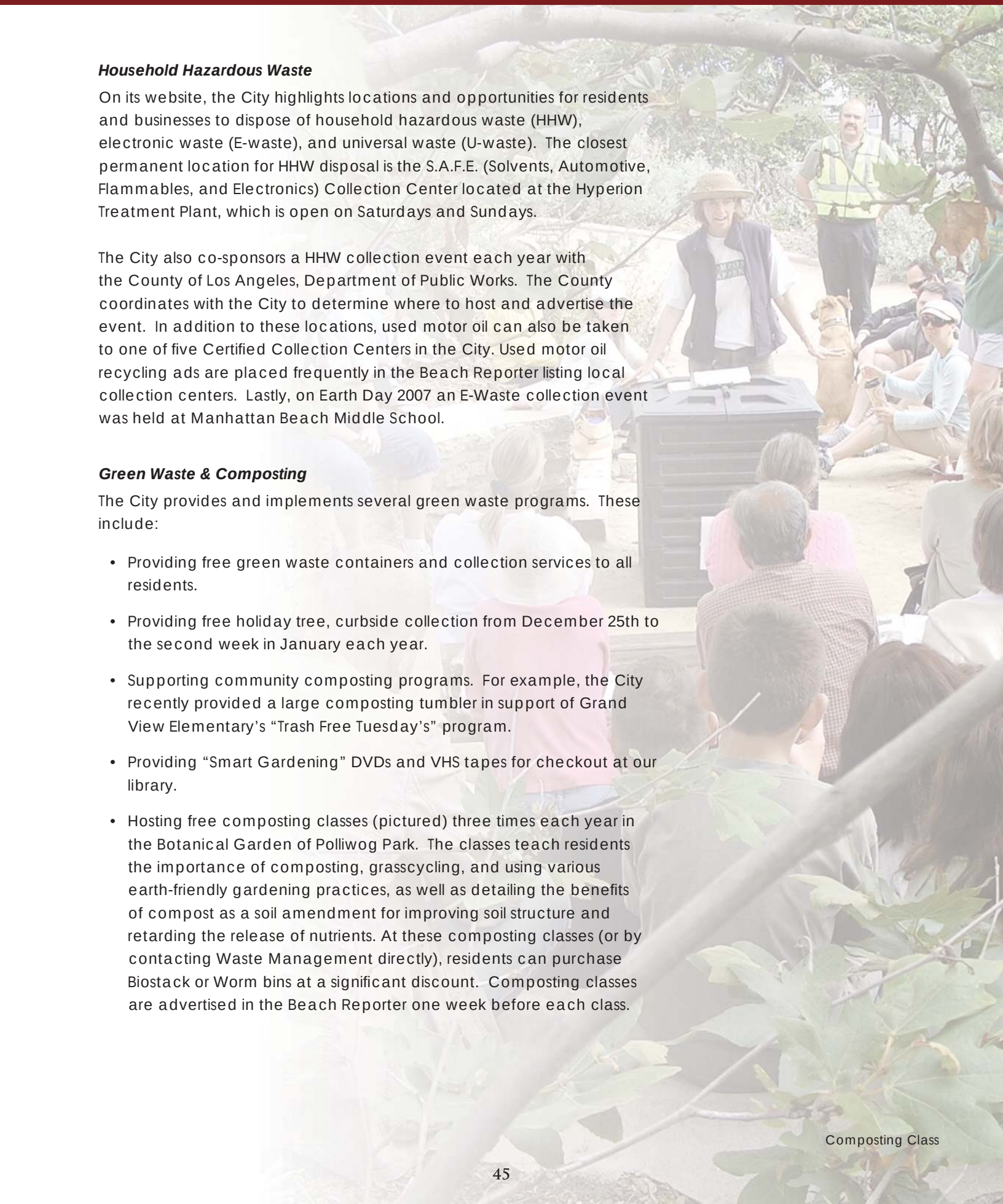
On its website, the City highlights locations and opportunities for residents and businesses to dispose of household hazardous waste (HHW), electronic waste (E-waste), and universal waste (U-waste). The closest permanent location for HHW disposal is the S.A.F.E. (Solvents, Automotive, Flammables, and Electronics) Collection Center located at the Hyperion Treatment Plant, which is open on Saturdays and Sundays.

The City also co-sponsors a HHW collection event each year with the County of Los Angeles, Department of Public Works. The County coordinates with the City to determine where to host and advertise the event. In addition to these locations, used motor oil can also be taken to one of five Certified Collection Centers in the City. Used motor oil recycling ads are placed frequently in the Beach Reporter listing local collection centers. Lastly, on Earth Day 2007 an E-Waste collection event was held at Manhattan Beach Middle School.

Green Waste & Composting

The City provides and implements several green waste programs. These include:

- Providing free green waste containers and collection services to all residents.
- Providing free holiday tree, curbside collection from December 25th to the second week in January each year.
- Supporting community composting programs. For example, the City recently provided a large composting tumbler in support of Grand View Elementary's "Trash Free Tuesday's" program.
- Providing "Smart Gardening" DVDs and VHS tapes for checkout at our library.
- Hosting free composting classes (pictured) three times each year in the Botanical Garden of Polliwog Park. The classes teach residents the importance of composting, grasscycling, and using various earth-friendly gardening practices, as well as detailing the benefits of compost as a soil amendment for improving soil structure and retarding the release of nutrients. At these composting classes (or by contacting Waste Management directly), residents can purchase Biostack or Worm bins at a significant discount. Composting classes are advertised in the Beach Reporter one week before each class.



Composting Class

Construction & Demolition

According to the City's Municipal Code, any construction and demolition (C & D) project with a total value of $100,000 or more must recycle 50% of the waste it generates. Submission of all landfill and recycling receipts are required by the contractor in order to process and finalize the project's Waste Management Plan. Analysis of the tickets turned in by contractors suggests that the City's C & D program has resulted in diverting about 70% of construction waste from landfills between 2004 and 2007. Though not all projects are required to meet the diversion goal, all C & D projects in Manhattan Beach are encouraged to recycle their waste.

Earth Day & Hometown Fair

Every April, the City of Manhattan Beach and VOICE (Volunteers and Organizations Improving the Community's Environment) co-present an Earth Day Festival at Polliwog Park, and every October, the City hosts the annual Hometown Fair. At both events, the City staffs a booth which features hands-on activities and information about environmentally friendly practices. Adults and kids alike line up to play the interactive spin-the-wheel quiz game, where participants are asked environmental quiz questions, and prizes are given out for correct, environmentally-conscious answers. Educational brochures highlight best practices for recycling, pet waste, storm water runoff, water conservation, and household hazardous materials. These well-organized and well-attended events raise awareness of environmentally friendly practices in a festive atmosphere.

School Recycling Programs

Manhattan Beach's school-based recycling, education and composting programs are facilitated through the City's refuse contract with Waste Management. Waste Management representatives contact each school at the beginning of the year to determine what bins, presentations, assemblies, or other types of assistance are needed. Some of the District's schools have taken greater advantage of Waste Management's services and implemented more extensive waste management programs.

Education & Outreach

In addition to the school programs highlighted, many of the City's other recycling education and outreach efforts are also contracted through Waste Management. Recycling Ads, brochures, flyers, bill inserts and newsletters are created by WM and disseminated throughout the year after copy and artwork are approved by City staff. The City also utilizes its website to provide information on landfill waste, green waste, and recycling (including HHW) programs.

Over 1,500 people spun the wheel and played the interactive environmental quiz game at this year's Hometown Fair

Local School Recycling Programs

All local schools have recycling programs in place. Here are a few examples:

Grandview Elementary School

Grandview has implemented a Planet Pals program, sponsored by the PTA, to promote environmental awareness. The program includes composting activities, encourages Trash Free Tuesday's, recycling, etc. Waste Management provides assistance with composting bins and education as well as provides support for the campus recycling program.

Pacific Elementary School

Waste Management meets with the new student council each October to train them on the campus recycling program, assists with the Cans for Cash program held in April, and provides waste containers on campus.

Manhattan Beach Middle School

Waste Management coordinates with the school's student council advisor to provide assistance and determine needs for the campus' recycling programs. Waste Management also confirms with the school's maintenance supervisor that all old corrugated cardboard (OCC) is being diverted.

Mira Costa High School

Waste Management works with the high school to track its campus recycling program throughout the year, and adjustments are made when necessary. For example, in December 2005, one 6-cubic yard trash bin was replaced with two 3-cubic yard recycling bins for OCC collection, reducing the school's solid waste bill by $422 per month. In the classroom, the high school's ecology club oversees classroom recycling, with support from Waste Management. The club makes presentations to the faculty to ensure teacher support with recycling mixed paper and items eligible for California Refund Value (CRV). Teachers are required to know where the main recycling bin is located and are expected to assign students to transfer the classroom recycling to the school bin. Ecology club members also maintain the school's Eco Land native garden and compost bins. Most years, Waste Management representatives make a composting presentation to the Ecology Club to enforce the best practices of composting.

American Martyrs School (K-8)

Waste Management provides twice-weekly recycling collection services for classroom and office recycling waste, and is working with American Martyrs to help them increase their bottle and can recycle efforts. Waste Management has also provided four 32-gallon recycling containers for the school's gym and playing fields.

Manhattan Beach Preschool & Adult School Programs

Waste Management makes presentations to one or two preschools each year at our local schools, including Manhattan Preschool, Montessori, Manhattan Academy, Creative Kids, Beach Babies, Via Pacifica, and South Bay Adult School.

Other Notable Programs

Reducing Solid Waste & Improving Recycling Efforts

Many cities use an incentive-based, residential fee structure for solid waste collection to achieve higher diversion and recycling rates. For example, Kirkland, WA provides unlimited, free recycling containers and one free green waste container to all residents much like the City of Manhattan Beach. However, landfill waste collection fees are based on container size, ranging from $22.88 for one 20-gallon mini-cart to $78.00 for one 96-gallon cart. In all, Kirkland offers five trash cart sizes and associated fees. This structure encourages residents to recycle more aggressively, which in turn reduces their utility bills. Santa Monica employs a similar tiered waste collection fee schedule.

The City of Los Angeles has adopted the statewide "Zero Waste" campaign and has set a goal of diverting 70% of its waste for recycling by 2020. This aggressive campaign began with an intensive waste stream analysis to pinpoint areas of opportunity for greater diversion. The City will focus on expanding its construction & demolition, composting, green waste, and curbside recycling programs, as well as allowing Styrofoam into weekly recycling collection. Three innovative programs being added to Los Angeles' recycling efforts include Commercial Restaurant Food Scrap Collection, Multi-Family Dwelling recycling (apartments, condos, and town homes), and promotion/implementation of sustainable development policies and guidelines.

In March of this year, the City of San Francisco became the first city in the U.S. to ban the distribution of non-biodegradable grocery bags. In March 2008, the ban will also apply to pharmacies. San Francisco's program is enforced through civil fines. Following this example, 13 other U.S. cities and the States of Alaska and New York are considering the ban of non-biodegradable grocery bags.

Diverting Construction & Demolition Debris

Similar to Manhattan Beach, the City of Inglewood requires all construction and demolition projects to divert 50% of their wastes, regardless of the value of the project. Inglewood dedicates three Community Services Inspectors (CSI) solely to audit construction and demolition projects for proper waste diversion and to issue citations for non-compliance. The CSIs inspect each site to confirm that the project's details match its waste management plan, and upon completion of the project the CSIs confirm that all waste has been properly diverted. The City's accounting department tracks all landfill and recycling receipts and issues the contractor a refund of the required deposit upon achievement and approval of the 50% diversion.

Recycling Green Waste

In addition to a Biostack and Worm Bin, the City of Los Angeles offers an Earth Machine Composter that mixes composted materials without turning. They also have a composting facility for the residents at Griffith Park with frequent bin sales events throughout the year.

Increasing Household Hazardous Waste Collection

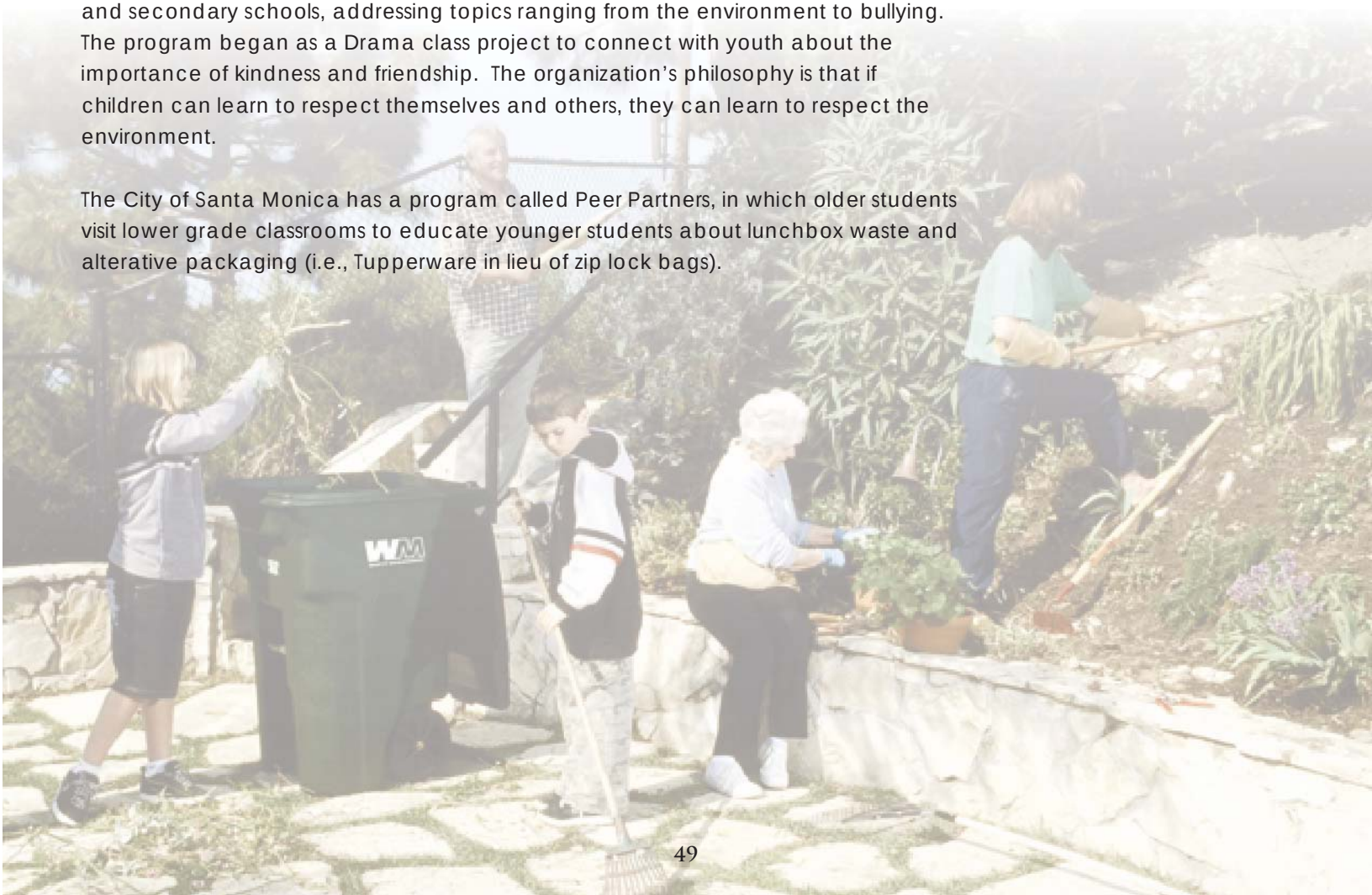
The Lake Michigan Districts of Lake, Porter and LaPorte Counties exclusively use a Household Hazardous Waste (HHW) Mobile Collection Service for all residents. In lieu of establishing HHW collection centers and events, household items are picked up directly at the home. Arrangements are made by appointment only, and the items must be left in front of the garage. Residents are required to pay $10.00 per pick-up.

Many cities offer a Sharps program (for medical syringes) in which residents receive free postage-paid, mail-back containers for their sharps.

Enhancing Educational Outreach

Climb Theaters, an organization based in Minnesota, performs plays at elementary and secondary schools, addressing topics ranging from the environment to bullying. The program began as a Drama class project to connect with youth about the importance of kindness and friendship. The organization's philosophy is that if children can learn to respect themselves and others, they can learn to respect the environment.

The City of Santa Monica has a program called Peer Partners, in which older students visit lower grade classrooms to educate younger students about lunchbox waste and alterative packaging (i.e., Tupperware in lieu of zip lock bags).



Programs & Practices for Future Consideration

Consider adopting a fee-based structure for solid waste collection

Upon the expiration of the current Waste Management contract in 2009, consider creating an incentive-based fee structure to encourage more aggressive recycling practices and reduce the amount of solid waste going to landfills. Set a goal of reducing the amount of residential trash generated by an additional 10% to 700 pounds per year and commercial business trash by an additional 15%, or 4,250 pounds per year.

Cost: $$ Feasibility Rating: 3

Implement a Styrofoam waste reduction program

The Styrofoam waste reduction program should evaluate and consider: 1) implementing actions that encourage businesses to use alternative food containers, such as those made from recycled material, 2) expanding the recycling program to include Styrofoam, 3) a Styrofoam reduction program through education, and 4) an ordinance banning the use of Styrofoam.

Cost: $$$ Feasibility Rating: 2

Prohibit the use of plastic bags in grocery stores

Consider prohibiting the use of plastic bags in grocery stores; consider subsidizing the purchase of reusable bags to encourage residents to use cloth and/or other reusable bags. .

Cost: $$ Feasibility Rating: 4

Improve community recycling and waste reduction efforts

Consider implementing a "Think Beyond Blue" campaign focusing on environmentally friendly practices that are beyond the blue recycling cart. The program would encourage people to "rethink" by:

- Making better consumer packaging decisions (i.e., buying in bulk instead of multiple packages)
- Considering organic waste disposal (food scrap recycling for businesses, composting for residents)
- Purchasing recycled products
- Enforcing proper household hazardous waste disposal

The program would include a "Rethink" webpage on the City's website listing practical ways residents and businesses can rethink a typical day and in turn help the environment.

Cost: $$$ Feasibility Rating: 1

Enhance multi-family dwelling recycling efforts

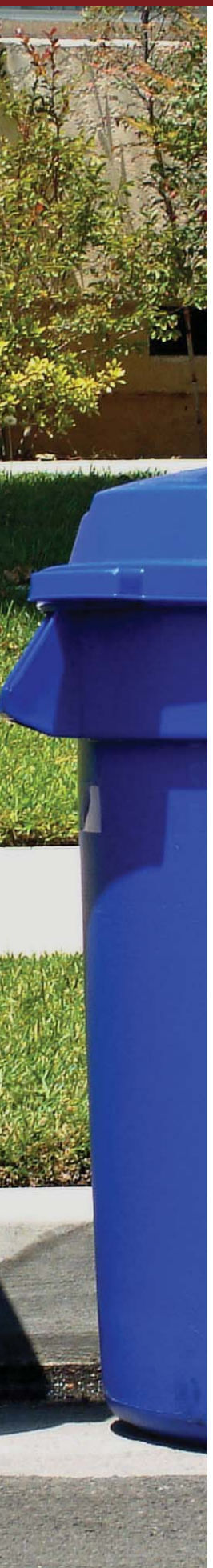
Consider ways to better provide and promote multi-family dwelling recycling efforts. Consider new recycling avenues to overcome space limitations.

Cost: $$$ Feasibility Rating: 1

Improve the amount of construction waste recycled

Consider requiring all construction projects to divert 50% of their waste instead of only those projects valuing $100,000 or greater. Add staff resources to oversee, audit, and enforce recycling requirements.

Cost: $$$$ Feasibility Rating: 2



Promote recycled goods

Create a "Buy Recycled in Manhattan" campaign and invite all businesses who sell earth-friendly items or services to submit an electronic form listing company information, a brief description of the earth-friendly products or services sold and artwork of the company logo.

Cost: $$$ Feasibility Rating: 1

Promote business "Green Management Plans"

Encourage businesses to create an annual "Green Management Plan" which identifies what they currently do and plan to do to be more environmentally friendly. Grade participating businesses (A, B, C, etc) as an incentive for them to participate in the program, and provide grade cards for placement in front windows.

Cost: $$$ Feasibility Rating: 1

Enhance green waste programs

Strengthen the composting program to encourage residents to compost at home. Increase the number of composting ads placed in the Beach Reporter to promote year-round composting. For businesses, implement the Commercial Restaurant Food Scrap Collection Program to increase awareness of the need to compost and recycle waste streams outside of typical collection.

Cost: $$$ Feasibility Rating: 1

Enhance household hazardous waste programs

Consider providing household hazardous waste mobile collection services for residents. Items collected could include paint, used motor oil and household cleaners, electronics (E-waste), universal waste (U-Waste, including compact fluorescent bulbs and batteries), and pharmaceutical waste. Educate residents on how to create at-home organic cleaning supplies in lieu of purchasing cleaning products considered hazardous.

Cost: $$$ Feasibility Rating: 1

Enhance education programs

Consider implementing or enhancing the following environmental outreach programs:

- Offer free "Go Green" classes to residents, e.g. provide a basic overview on how to "green" their lifestyle from A-Z. Videotape the class to post on the City website.
- Improve the City's website information regarding waste and recycling by providing more topics, easier links and greater resources. Create a kid's section on the website focused on the environment, offering links and tools to help Manhattan Beach students build an earth-friendly lifestyle.
- Promote the "Rethink" concept (identified above).
- Improve outreach to students about composting, recycling, hazardous waste disposal, etc., and provide City-subsidized recycling containers for classrooms, staff offices, and other key areas in our schools.
- Promote student "peer-to-peer" activities through school clubs (e.g., drama, ecology).

Cost: $$$ Feasibility Rating: 1

Storm Water Management

Santa Monica Bay and its beaches are highly valued recreational resources to Manhattan Beach residents and visitors. However, these resources are impacted by polluted storm water and urban runoff, which enter the storm drain system and are ultimately discharged untreated, directly into the ocean. Pollutants such as motor oil, trash, fertilizers, pet droppings and soap residue can be generated from simple daily activities such as parking and washing a car, taking out the trash, maintaining landscaping, or walking the dog. Once in the ocean, they adversely affect not only aquatic and avian species, but also people. Cleaner oceans mean a healthier environment for everyone.

City Programs & Policies

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. As required by the municipal NPDES permit (see Storm Water Regulations side bar), Manhattan Beach has implemented many measures to control polluted runoff from reaching the ocean. These include:

- Adopting municipal code requirements to ensure the health, safety, and general welfare of its citizens and its coastal receiving waters, and modifying City building code requirements to control pollution generated by construction activities. (See the Sustainable Development section for more information.)
- Implementing a multi-faceted public education program to inform residents and businesses of how they can partner with the City in pollution prevention.
- Implementing pollution control measures and devices in the City's streets and catch basins to control urban runoff.
- Constructing dry-weather, low-flow storm water diversions to the sewer system.
- Implementing measures to comply with the municipal NPDES permit requirements to control and/or eliminate sources of bacteria contamination.
- Conducting commercial business inspections targeting industries whose activities have been identified as contributing to the urban runoff pollution (e.g., restaurants, auto repair shops, and gas stations).
- Identifying and terminating illicit discharges to the storm drain system.
- Modifying City facilities and maintenance activities to reduce and/or eliminate polluted storm water runoff from reaching the ocean.

Municipal & City Building Code Requirements

One component of the municipal NPDES permit calls for cities to develop a list of and require the implementation of best management practices to infiltrate, filter, or treat polluted runoff from all development projects one acre or greater in size. It also applies to smaller projects that meet certain criteria, e.g., auto repair shops, gas stations, or restaurants of 5,000 square feet or more, and parking lots of 25 spaces or more. This is found under the permit's Standard Urban Stormwater Mitigation Plan (or SUSMP) provisions. To meet this permit requirement, a SUSMP ordinance was adopted by City Council in 2000.

Development projects in Manhattan Beach subject to SUSMP must incorporate design features and structural controls to minimize the impact of the final project on water quality. Because Manhattan Beach is a predominantly built out city with a high percentage of residential properties less than one acre, its development projects rarely trigger SUSMP provisions. Last fiscal year, the City processed only three SUSMP plans, and has a total of only five SUSMP plans within the community.

The City has begun to require that projects implement additional pollution mitigation measures beyond that which is required in the municipal storm water permit. For example, a City ordinance requires that trash enclosures for commercial establishments be covered and outfitted with drainage plumbed to the sanitary sewer system. This approach prevents rain from entering the trash enclosure, and it allows the enclosure to be steam cleaned without adversely impacting water quality at the beach.

Storm Water Regulations

In 1970, the Environmental Protection Agency (EPA) was created… "as an independent regulatory agency responsible for the implementation of federal laws designed to protect the environment." Soon after its formation, EPA enacted the landmark Federal Water Pollution Control Act, more commonly known as the Clean Water Act (CWA), to regulate polluted discharges into the nation's water bodies.

One component of the CWA is the Municipal Storm Water National Pollutant Discharge Elimination System (NPDES) program. Administered under the umbrella of the California State Water Resources Control Board, municipal NPDES permits are issued to cities and counties setting the framework and minimum standards for operating and maintaining municipal storm drain systems in a manner that minimizes the discharge of pollutants to surface waters.

In Los Angeles County, a single municipal NPDES permit is issued approximately every five years to the County of Los Angeles, Department of Public Works and 84 cities incorporated within its jurisdiction. The City of Manhattan Beach is one of the cities covered under the County's municipal NPDES permit, and is therefore responsible for the quality of untreated surface water discharges reaching Santa Monica Bay from sources within the City.

Public Education & Outreach

Manhattan Beach employs a wide range of approaches to educate the general public and businesses about sources of and ways to reduce storm water and urban runoff. These include hosting/attending public events, conducting presentations at schools and other forums, maintaining a comprehensive website, providing educational materials, running media ads, implementing a restaurant certification program, and conducting regular mailings to residents. For example:

- Community events such as Earth Day and the Hometown Fair raise awareness about storm water pollution, its sources and what can be done to prevent pollution from entering storm drains and reaching the ocean.
- The City's Environmental Programs webpage provides brochures about the residential, commercial and construction storm water best management practices as well as links to storm water regulatory agencies.

- Educational brochures and other materials promote storm water pollution prevention. They are distributed at the public counters in City Hall and the Public Works yard, as well as by City employees in the field when they observe residents, restaurants, and/or contractors practices being implemented that may contribute to storm water pollution. The City also provides restaurants and other businesses calendars featuring storm water best management practices.
- Newspapers and cable television (e.g., the Beach Reporter and Public Access Channel 8) promote proper litter abatement, used oil recycling, and use of the S.A.F.E. household hazardous waste facility.
- The City's restaurant certification program educates local restaurants about storm water runoff and how their activities can adversely affect our local beaches and ocean. It also promotes best housekeeping practices to reduce improper and contaminated discharge from food service activities.

More information about the City's education and outreach efforts can be found in the Solid Waste & Recyclables section of this report; it highlights the City's trash, household hazardous waste, recycling, composting, and water conservation efforts, all of which have the potential to impact storm water quality.

Pollution Control Measures: Street Sweeping, Catch Basin Cleaning & Pollutant Excluder Devices

Street sweeping is a source control measure used to remove trash, debris, sediment and any pollutants attached to the sediment (e.g., metals, grease, bacteria) from City streets, in particular near curbs and gutters. The City implements this program through a contract with Cleanstreet. All public streets, paved public alleys, the Strand and specified parking lots are swept regularly, typically weekly or more often if needed. To make sure streets are swept where pollutants are most likely to accumulate, "No Parking During Street Sweeping" signs are posted on many of the City's streets and enforced daily by the City's police Community Service Officers (CSOs), who issue citations to violators. Street sweeping is less effective where residents have opted out of having the signs posted because sweeper trucks must circumvent parked cars and thus the location where pollutants typically accumulate. Approximately 35% of streets do not have signs posted.

Residents can petition to have street sweeping signs removed if at least 66% of the residents on a defined block are in favor of the action. Likewise, where no signs are posted, 66% of the residents must be in support of having them installed.

The City's catch basins provide a direct point of entry for pollutants into the storm drain system. To control pollution, Manhattan Beach cleans its catch basins according to a schedule which prioritizes areas within the City. Basins which typically accumulate more debris and are located near the beach are considered Priority A basins, of which the City has 42. These catch basins are cleaned at least four times per year (more

if needed). An additional 57 Priority B catch basins are cleaned twice per year and the remaining 376 Priority C catch basins are cleaned once per year. Some of our catch basins have also been retrofitted with pollutant removal devices depending on the pollutant of concern. For example, five catch basins are equipped with insert devices to capture trash, and one catch basin near a commercial automotive facility also has an absorptive pad to absorb hydrocarbons. Lastly, the City uses "No Dumping - This Drains to Ocean" permanent markings over catch basins to educate residents and encourage them not to dump waste into them. The markings are inspected annually and replaced if needed.

Within the City, ten hydrocarbon oil clarifiers have been installed to separate the free phase oil and grease from runoff; two are located at the Public Works Maintenance Yard (see City Facilities below), three at private automotive facilities and five in local commercial developments. In addition, two commercial developments, Sketchers and Metlox, have subterranean parking and were required to install clarifiers per the City code.

Ten Continuous Deflection Separators (CDS units) have been installed on the City's major storm drains located near ocean outfalls, at Polliwog Park, and at other strategic places throughout the City. These units intercept and capture trash and debris in the storm drain system before it washes out to the beach, and are considered state-of-the art for trash and debris removal. Absorbent pads used to collect oil and hydrocarbons are replaced in the CDS units each time they are cleaned. The City's CDS units were cleaned twice in 2006/07 and there was 36 cubic yards of debris removed from the units. The used absorbent pads are disposed of as hazardous waste. In 2006, the CDS units prevented 19 cubic yards of trash and debris from washing out to the beach.

Flow Diversions & Infiltration

Manhattan Beach has three mechanical storm water diversions; two are located at the outlet of the City's two largest storm drains, 28th Street and Manhattan Beach Pier, and one is at Polliwog Park. Both the 28th Street and Polliwog Park diversions have special permission from LACSD to operate year-round, with the Polliwog Park diversion permitted for 24-hour operation. Rain sensors disable the diversion pumps whenever they sense that 1/10" or greater of rain has fallen. The Manhattan Beach Pier diversion, or "Pier Weir," pre-treats the runoff by removing oils, grease and heavy metals prior to diversion. In fiscal year 2005/06, approximately 473,000 gallons of runoff that would have otherwise discharged to the ocean were diverted to the Los Angeles Sanitation Districts; in 2006/07 some 2.6 million gallons of runoff were diverted. The City is currently evaluating the reasons for and sources of the five-fold increase in dry weather flows discharging through the diversions.

Dry Weather Diversions

Dry weather diversions are designed to utilize excess capacity in the sanitary sewer system to treat dry weather runoff as well as so-called first flush low flows of storm water. These dry weather/low flow diversions are typically permitted by the Los Angeles County Sanitation Districts (LACSD) to operate only during summer and only at night when there is excess capacity in the sanitary conveyance and treatment system. This practice is particularly helpful because capturing and diverting contaminated dry weather flows helps improve beach water quality during the summer when recreational beach use is highest. The first flush of storm flows often contains the highest concentrations of pollutants and bacteria observed during a rain event, so to the extent these first flushes can be diverted, the overall pollutant load reaching the ocean is reduced.

The City also installed approximately 25 new catch basins along The Strand designed with open bottoms to allow infiltration of dry and wet weather low flows into the underlying sandy soil. This is effectively another diversion which utilizes the natural sandy soil to divert and treat runoff which would otherwise discharge at beach outfalls near the shoreline.

Bacteria Control Measures

Manhattan Beach is subject to the bacteria total maximum daily load (TMDL) limitation set by the Regional Water Quality Control Board (Water Board). This TMDL requires the City to meet certain bacteria discharge limitations in dry-weather (May-November) storm water and urban runoff discharges. However, some exceedance violations are allowed in the winter rainy season. It is likely that these limits will be included in the new municipal NPDES permit to be issued in 2008. There is no single strategy that completely insulates the City from discharges to the ocean. Recognizing the need to minimize the potential for exceeding bacterial limits, the City has established a multi-faceted program that includes the efforts highlighted both above and below, including but not limited to flow diversions and infiltration, pollution control measures, and commercial business inspection programs.

"A TMDL is a calculation of maximum amount of a pollutant that a water body can receive and still meet water quality standards." (EPA).

TMDLs are pollutant specific; the City of Manhattan Beach must comply with the bacteria TMDL.

Most strategies fall into one of two categories: 1) controlling pollution at or near the source, such as street sweeping, restaurant programs, retention/infiltration basins, and 2) end-of-pipe solutions, such as storm water diversions and CDS units. Storm water diversions, however, have obvious limits during high flow storm events because only low flows are permitted into the sanitary sewer system. More promising are the efforts being made to reduce flow by using and promoting infiltration techniques on both private and public property. Staff continues to explore opportunities to promote private, on-site infiltration, and has already initiated a pervious pavement project at eight municipal lots. Siting infiltration systems that can accommodate flows from larger watersheds will become an even great focus as we continue our efforts to meet the bacteria TMDL requirements.

Commercial Business Inspection Program

Restaurants have been identified as likely contributors to storm water pollution, particularly for bacteria or nutrients that feed the growth of bacteria, through improper cleaning practices or poor housekeeping that allow food particles, oil, grease, trash and cleaning products to flow into the street, gutter and/or storm drain system. Problematic activities include washing kitchen mats outside, not maintaining trash enclosures, leaving trash bins and grease receptacles uncovered, and dumping liquid waste into trash bins. Restaurants may also discharge excessive quantities of fats, oil and grease into the sanitary sewer system which can cause blockages and contribute to sewer overflows. New food establishments are required to construct covered trash enclosures to prevent trash and debris from entering the storm drain.

Restaurant Certification Program

In cooperation with the Santa Monica Bay Restoration Commission (SMBRC), Manhattan Beach, along with Hermosa Beach, Redondo Beach, and Torrance, has implemented the Clean Bay Restaurant Certification Program targeting food service establishments that have

the potential to impact storm water. The SMBRC developed a comprehensive 28-point storm water inspection checklist that requires 100% compliance in order to receive Clean Bay Restaurant Certification by the SMBRC; it far exceeds the minimum requirements of the municipal NPDES Permit. During 2006/07, the City of Manhattan Beach inspected all of its restaurants using the checklist and conducted follow up inspections for those that did not achieve certification during the first inspection. Seventy percent of Manhattan Beach's food service establishments earned this award in its first year of implementation. Restaurants achieving the certification are provided a Clean Bay Restaurant certificate and encouraged to post it in a highly visible location such as in a window near entrances. The SMBRC also publicizes the names and locations of Clean Bay certified restaurants on its website (www.santamonicabay.org) and through press releases.

The municipal NPDES permit requires that cities inspect restaurants twice within each five year period.

Illicit Discharges

The City strictly enforces the prohibition against illicit discharges, which are defined as any material other than storm water that gains entry into the storm drain system, unless the discharge is explicitly exempted under the municipal NPDES permit. Examples of illicit discharges include dirt and debris from construction projects, restaurant oil and grease disposed of outdoors, swimming pool water that is not properly dechlorinated, household hazardous waste (motor oil, paint) and dirty, soapy water. Manhattan Beach's Illicit Connections and Illicit Discharges Elimination (IC/ID) Program documents, tracks and reports all such reported cases. This allows the City to monitor trends in types and frequency of illicit discharges and to target public education activities toward problematic behaviors.

Public Works' inspectors typically inspect for and respond to illicit discharges entering the public rights-of-way, although such discharges may be reported by City employees or citizens. In the event of an illicit discharge, the responding officer, inspector or employee will give instructions to the violator to clean the spill by a specific time and will issue a warning notice or citation. If the clean up does not occur as requested, a citation and/or contact with the appropriate City department or agency is initiated for clean up assistance. The City identified 27 illicit discharges in FY 2006/07, eleven of which were issued Violation Warning Notices. All illicit discharges were cleaned up promptly.

City Facilities

The City's Public Works maintenance yard has two vehicle wash pads which direct low flow runoff to a clarifier for pretreatment to remove oil and grease, and then to the sanitary sewer. A second clarifier is combined with a CDS unit equipped with floating filters to capture hydrocarbons and debris from parking lot runoff.

The City is also in the process of converting 130,000 square feet of impervious public parking lot space to pervious pavement which will effectively infiltrate rainfall without generating run-off. This project has been made possible by a $900,000 grant from the State Water Resources Control Board awarded in 2006.

The City is currently designing a cover to be constructed over the upper portion of the Public Works maintenance yard where material stockpiles, trash and waste are stored until they are hauled off. Once completed, the cover will prevent the trash and waste from mixing with rainwater, effectively eliminating contaminated runoff from this site.

Lastly, Manhattan Beach provides 20 "mutt mitt" stations throughout its parks, dog runs, The Strand, and greenbelt to encourage pet owners to pick up after their pets. Pet waste (bacteria) is a significant contributor to storm water pollution if left on the ground and mixed with storm water or urban runoff.

Other Notable Programs

Pollution Control Measures

Street Sweeping

Many local cities have enhanced street sweeping programs, which include increased street sweeping frequency, more thorough coverage and additional focus on commercial districts. Additionally, other cities do not allow an opt-out program, thereby effectively sweeping every street near the curb where pollutants are likely to accumulate.

Catch Basins

Locally, catch basin inserts and catch basin screens/debris excluders of all types are among the most commonly installed municipal best management practices to control trash from entering the storm drain system. Cities subject to the trash Total Maximum Daily Load (TMDL) requirements are particularly compelled to install such devices for trash removal. For example:

- The City of Los Angeles has installed 9,970 catch basin inserts along with 7,278 catch basin screens.
- Santa Monica has installed 500 catch basin inserts.
- West Hollywood has installed 195 catch basin debris excluders along with 57 catch basin inserts.
- Hermosa Beach has installed 41 catch basin inserts in high priority areas (downtown near the ocean and the beach) to collect and dispose of trash. Monitoring of annual catch basin cleaning records assists in properly categorizing catch basins for priority and determine if they should be either promoted or demoted in terms of frequency of cleaning.
- Six other regional cities have installed between 5 and 70 catch basin inserts.
- The County of Los Angeles has installed a significant number of catch basin inserts in County-owned catch basins.

Pollutant Excluder Devices

A total of 105 gross pollutant separators (69 CDS units and 36 Stormceptor units) have been installed within the Santa Monica Bay-Ballona Creek watershed management area (including those installed in Manhattan Beach). Other cities in this watershed management area, as defined by the Regional Water Quality Control Board, include: Beverly Hills, Culver City, El Segundo, Hermosa Beach, Los Angeles (portion of), Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Santa Monica and West Hollywood.

Flow Diversion & Infiltration

Many cities, including Manhattan Beach, have installed a variety of structures and devices to capture, infiltrate and/or divert urban runoff flows, including infiltration trenches, porous paving, bioretention facilities, biofilters, cisterns/dry wells, clarifiers, downspout filters, infiltration pits, synthetic turf, vegetated swales, wet ponds, and grease interceptors. The City of West Hollywood retrofitted one of its municipal parking lots with pervious pavement three years ago. The parking lot has since experienced heavy rains and has proven to be a successful project.

Commercial Businesses

Many cities have a fats, oil & grease (FOG) program (and related ordinances) to eliminate improper discharge of these contaminants to the sanitary system. They require grease control devices for restaurants and other food service establishments to reduce the discharge of FOG into the sanitary sewer system, thereby reducing the incidence of sanitary sewer blockages and overflows that may reach the storm drain system and ultimately the ocean. This FOG program will soon be required of all cities under new state requirements.

SUSMP Requirements

Under its Urban Runoff Pollution Ordinance, the City of Santa Monica has expanded its definition of the types of new and redevelopment projects that must implement the SUSMP requirements identified in the municipal NPDES permit. For sites less than one acre, SUSMP requirements now apply to:

1. A vacant site or a site where 50% or more of the square footage of the structures is removed prior to construction.
2. A site where the owner is making repairs, alterations or rehabilitation in an amount exceeding 50% of the replacement cost of the building or structure.
3. A project which will result in improvements to 50% or greater of the square footage of a building, creates or adds at least 5,000 square feet of impervious surfaces, or creates or adds 50% or more of impervious surfaces.
4. A City project which would not otherwise be required to comply with the urban runoff ordinance (via 1-3 above) but where runoff controls are feasible and economical.

This definition effectively requires all new single family homes, as well as any significantly remodeled homes, to meet SUSMP standards.

New developments in Santa Monica are also strongly encouraged to incorporate design elements to maximize infiltration as part of compliance with the SUSMP treatment volume standards. These include maximizing permeable surfaces, redirecting runoff to permeable surfaces and/or storage containers, and removing or designing curbs, berms, etc. to provide access to permeable and landscaped areas.

Programs & Practices for Future Consideration

Pollution Control Measures

Ensure street sweeping signs are installed on all City streets

The City should consider eliminating its opt out petition program and make mandatory the posting of street sweeping signs on all public streets and alleys. This would result in cleaner streets and effectively reduce the amount of pollutants reaching the storm drain system and ultimately the beaches and ocean.

Cost: $ Feasibility Rating: 3

In high priority areas of the City, install devices to reduce or eliminate trash from entering the storm drain system and/or reaching the ocean

Evaluate the maintenance needs of and consider the following: 1) placing trash excluders/screens over catch basin inlets, which are designed to remain closed during dry weather but are spring loaded to open under heavy rain conditions to prevent flooding; 2) installing filters on storm drains that discharge directly onto the beach; 3) installing CDS units near large outfalls where there is no dry weather diversion.

Cost: $$$ Feasibility Rating: 1

Flow Diversion & Infiltration

Evaluate additional opportunities to divert contaminated dry weather flows

Although the City has constructed several dry weather diversions, there are additional locations where diverting flows to the sanitary sewer system are desirable. One example is the 1st Street storm drain, which discharges flows near the shoreline. Available sewer line capacity and accessibility are required elements for any diversion opportunity identified for consideration.

Cost: $$$ Feasibility Rating: 1

Evaluate additional storm water infiltration opportunities

Where dry weather diversions are not feasible, consider appropriate locations to infiltrate dry weather and first flush storm flows. The sandy soils present in Manhattan Beach, particularly in areas west of the greenbelt, are optimal for such solutions. Also investigate the possibility of diverting low flows from CDS units to the sand for percolation.

Cost: $$$ Feasibility Rating: 1

Commercial Business Inspections

Enhance the City's current business inspection program for key sectors

Consider enhancing publicity, public awareness and understanding of the City's Clean Bay Restaurant Certification program and give restaurant owners and managers greater incentive to participate. Also consider enhancing the program to address fats, oil & grease (FOG) by requiring control devices for restaurants and other food service establishments to reduce FOG discharges into the sanitary sewer system. This would reduce the likelihood of sanitary sewer blockages and overflows that can occur when FOGs are inappropriately discarded, and also reduce the maintenance resources required by the City to inspect the adjacent sewer pipes. An enhanced FOG program

is part of the Sewer System Management Plan being developed for the City under a separate regulatory program for sanitary sewer collection systems.

Cost: $$$ Feasibility Rating: 1

Illicit Discharges

Increase enforcement and monitoring to reduce illicit discharges

Consider enhancing public education about what constitutes illicit discharges and focusing on those sectors most often violating the City's illicit discharge ordinance.

Cost: $$ Feasibility Rating: 2

City Facilities

Evaluate opportunities to upgrade City facilities and/or operations to reduce contaminated runoff

At a minimum, consider installing or implementing the following at City-owned facilities: 1) installing a re-circulating car wash system at the maintenance yard to save water and filter/reuse it prior to discharge to the sanitary sewer; 2) installing underground storage tanks or injection wells to catch runoff and allow water to percolate (or be pumped) into the soil; 3) developing site-specific percolation basins to catch and infiltrate storm water runoff; 4) retrofitting more parking lots with pervious pavements and other pollutant capturing devices.

Cost: $$$$ Feasibility Rating: 1

Municipal & Building Code Requirements

Consider further modifications to municipal and building code requirements that effectively target pollutants of concern

Areas for consideration include: 1) enhancing trash enclosure requirements, 2) maximizing retention of storm water on-site to reduce contaminated runoff, and 3) imposing administrative penalties for SUSMP violations.

Cost: $$$ Feasibility Rating: 3

Consider establishing a revenue stream to support the implementation of storm water pollution control requirements

Approximately every five or six years, the municipal storm water NPDES permit is readopted. With each cycle, the Los Angeles Regional Water Quality Control Board modifies and adds additional storm water pollution control requirements that cities must comply with to control storm water and urban runoff pollution.

The City's capital and operations needs, as well ensuring compliance with the municipal NPDES regulations, are rapidly exceeding the City's financial ability to fund other much-needed improvements. Compounding the problem, any storm drain fee increase must be approved by residents under Proposition 218 guidelines, thus limiting our ability to increase fees as an additional revenue stream. Absent a rate increase, other funding sources should be evaluated to create a long-term viable source for storm water NPDES compliance.

Cost: $$ Feasibility Rating: 3

PROCUREMENT *Policies*

Procurement is often one of the most overlooked aspects of preserving our environment. Yet, manufacturers will always respond to consumer demands. If large consumers such as federal, state, and local governments demand environmentally-friendly products, production of such items will increase, and as a result, prices will decrease.

City Programs & Policies

The City of Manhattan Beach purchases millions of dollars of goods and services each year. The Finance Department is responsible for the purchasing cycle, which includes acquisition, and in some cases, disposal of products at the end of useful life. While the City does not currently have explicit policies regarding the procurement of environmentally friendly products and services, or for environmental product disposal, steps have been taken informally in number of areas. These include purchasing recycled goods and materials, using more eco-friendly products, and implementing energy conservation measures (see side bar on opposite page). Additionally, the City consistently looks for opportunities to further its green purchasing portfolio.

Other Notable Programs

Clearly, environmentally friendly purchasing has grown from simply buying recycled products to addressing other environmental concerns. A growing number of public agencies have adopted policies that encourage selecting products that conserve natural resources, are less hazardous, more energy and water efficient, and less toxic. Further, the federal government has defined "procurement best practices" as those that typically involve identification of environmentally preferable products (EPP) and services which have a lesser or reduced effect on human health and the environment when compared with competing products that serve the same purpose. The product or service comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation maintenance or disposal.

Today, there are a growing number of organizations dedicated to assisting the public in green product specification and selection, and green policy development. For example, the North American Green Purchasing Initiative (NAGPI – www.cec.org) has developed a self-assessment tool that provides information on how other organizations are implementing environmental purchasing, and highlights areas

where we can improve our own current practices. The self assessment tool includes questions such as:

- Is your office equipment Energy Star (or equivalent) certified?
- Have you implemented ways of greening day-to-day activities (i.e. use of ceramic cups instead of Styrofoam)?
- Do employees practice paper-conserving activities (i.e. reuse of scrap paper or defaulting office printer to double-sided printing)?

The State of California Department of General Services (www.green.ca.gov) has developed a number of eco-friendly specifications and resource lists in response to environmental purchasing laws applicable to state procurement. The City may "piggyback" on those contracts and obtain quantity discounts on the selected items. The state's website includes listings of vendors who provide the environmentally friendly products, as well as copies of the specifications, costing information, and performance data.

Responsible Purchasing Network (RPN) (www.ResponsiblePurchasing.org) is a national network of procurement-related professionals dedicated to socially responsible and environmentally sustainable purchasing. Its website includes best practices, cost-benefit calculators, and buying guides.

Environmental Certifications & Labels

The complexities of product content vis-à-vis environmental impacts require the ability to parse data and often analyze competing impacts. This can make product specification development complex, labor intensive, and in some cases, costly. As a result, many cities and public agencies have adopted policies and practices that rely on third party environmental certifications and labels to assist in their purchasing decisions. The following are examples of such certifications:

Electronic Product Environmental Assessment Tool (EPEAT) www.epeat.net

EPEAT is a system in which electronics manufacturers declare their products' conformance to a comprehensive set of environmental criteria in eight environmental performance categories such as energy star rating, packaging, materials selection, etc.

Green Seal - www.greenseal.org

Green Seal provides science-based environmental certification standards for a variety of products including paints and coatings, floor care products, and paper products.

Recycled & Environmentally Preferable Products Used in the City

- Recycled tire stops (for parking spaces)
- Refurbished modular furniture
- Recycled rubber matting for City playgrounds
- Recycled copier paper
- Recycled hand towels
- Recycled tissue paper
- Recycled office products (e.g., post-it notes, file folders)
- Reusable canvas bags for weekly Council packet deliveries
- Pre-cast concrete refuse and recycling containers
- Lead-free primers in law enforcement ammunition purchases
- Paint with low Volatile Organic Compounds (VOCs)
- Alternative-fuel vehicles (see also the Vehicle Fleet and Fuel Usage section)

Energy & Resource Conservation Measures

- Sharing computer printers
- Installing Waterless urinals
- Purchasing/subsidizing public transit passes for students, older adults, and the disabled
- Using Energy Star compliant monitors and low mercury fluorescent lamps

Proper Resource Disposal

- Recycling empty laser toner cartridges
- Recycling scrap metal (iron, brass, etc.)
- Recycling mercury vapor lamps
- Properly disposing of electronic and universal wastes (E-waste and U-waste)

Chlorine Free Products Association
www.chlorinefreeproducts.org
The Chlorine Free Products Association is an independent not-for-profit accreditation and standard setting organization. The primary purpose of the association is to promote total chlorine-free policies, programs, and technologies throughout the world. They publish a list of acceptable paper products.

Greenguard Environmental Institute (GEI)
www.greenguard.org
GEI establishes acceptable indoor air standards for indoor products, environments, and buildings. GEI's mission is to improve public health and quality of life through programs that improve indoor air. Product certifications range from furniture and paints to office equipment and sealants.

The use of these certifications simplifies the procurement process by allowing the City to purchase EPP without having to perform complex analyses. Additionally, because some manufacturers may label their products green when in reality they are not, these certifications give buyers assurance that they are actually making a difference with their purchases.

Many environmentally preferable products are defined by the following characteristics:

- Recyclable, biodegradable, or compostable
- Containing high recycled content
- Made from renewable materials
- Bio-based
- Resource efficient, pollution & waste reducing
- Refurbished, reusable or repairable
- Containing low volatile organic compounds (VOC's)
- Low toxicity, chlorofluorocarbon (CFC)-free
- Heavy metal free (lead, mercury, cadmium)
- Carcinogen-free
- Use of alternative energy source

While these are important attributes, many policies go on to state that the products may be used only if there is no reduction in safety, quality, or effectiveness.

Programs & Practices for Future Consideration

While we have made progress toward our goal of being environmentally smart with our purchasing dollars, there are a number of actions we can take to enhance our "green" purchasing.

Develop environmentally friendly procurement policies

Consider developing procurement policies that evaluate the environmental impacts of the goods and services we utilize. The procurement policy should consider the following alternative approaches:

1. **Evaluate the price differential between environmentally preferable products and standard products**

   Consider establishing a premium offset rate, whereby the prices for eco-products are considered equal for bidding purposes if they are within a set percentage above the standard product pricing. Such a policy can be implemented selectively by commodity to address current market conditions (ex: 6% preference for paper, 15% for vehicles, etc.). A similar preference system has been applied in other circumstances by the government in promoting a particular program or purpose (e.g., "buy local" and disadvantaged business enterprise preferences). While this approach levels the playing field for higher priced eco-products, it may also have the unintended consequence of encouraging suppliers to keep prices higher for eco-products knowing that there is a built-in price advantage.

   Of course, there are also examples of environmental products that actually cost less than their non-eco counterparts, including recycled toner cartridges and re-treaded tires. But for the most part, environmentally preferable products typically carry a higher price tag. As a result, some public agencies have developed policies to address the economic impact of going green, while also addressing the need to remain fiscally responsible.

   Cost: $$ Feasibility Rating: 1

Cost Differences in Products

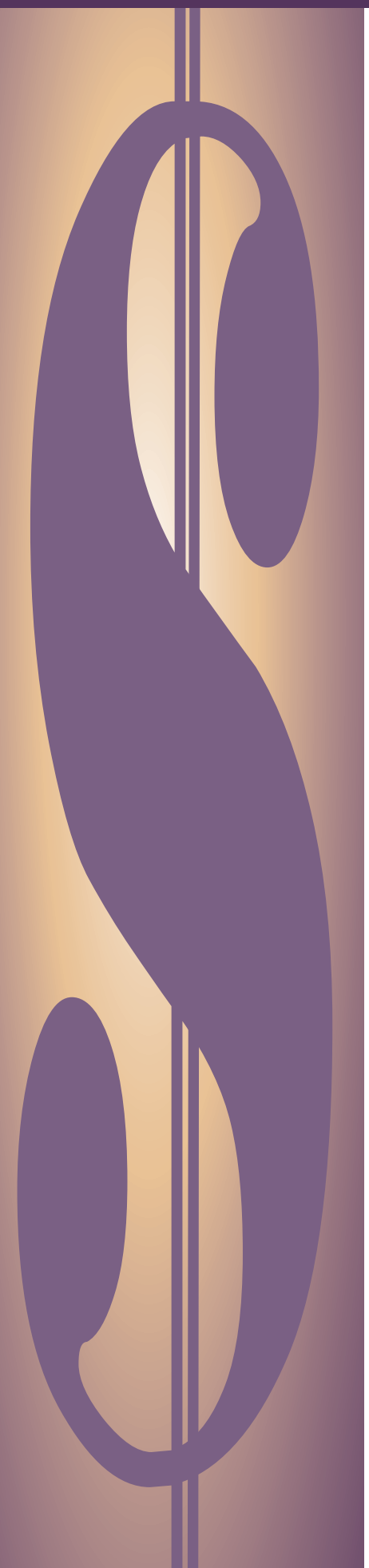
There is often a cost differential between standard products and "green" products. For example:

- Recycled copy/print paper costs 6% to 30% more than virgin paper.
- Biodiesel costs approximately two to forty cents more per gallon than standard diesel fuel, depending upon the blend rate.
- A gasoline-electric hybrid vehicle carries a price premium of nearly $5,000, or 30% over the non-hybrid version.
- Compact fluorescent lamps (CFL) typically have an initial cost up to seven times more than an incandescent light bulb.

2. **Consider environmentally friendly products with cost as a secondary criterion**

   Consider selecting products based primarily on the environmental preference, giving less regard to the cost differential. The City could specify products based upon their environmental impacts, and accept bids based upon competing products only of similar eco-friendly design/content. For example, we know that hybrid-powered vehicles are more expensive to purchase than similar gasoline-only powered vehicles. But because we prefer the environmentally friendly hybrid, we specify the more costly vehicle despite the availability of lower priced alternatives.

   Cost: $$ Feasibility Rating: 1



3. **Consider pricing preference, whereby all products compete on price or value**

   Consider the impacts of treating eco-friendly and standard products as equal, as long as the competing products meet the required minimum specifications. If a bid for an environmentally friendly product is received, the product will be selected only if it is the best value, environmental impacts notwithstanding.

   Cost: $ Feasibility Rating: 1

4. **Consider lifecycle cost analysis to assist in selecting goods and services**

   Consider lifecycle costs as the primary criterion. The product's lifecycle cost is a useful tool when comparing products; it takes into account not only the initial purchase price of the product, but also the operational costs, maintenance costs and salvage value at the product's end of useful life.

   For example, using the purchase of a Honda Civic gasoline-electric hybrid; while the total initial cost shows a $5,000 price premium, there are clearly reduced operating costs from better fuel economy, and a higher resale value. However, maintenance costs are also higher than with the standard gas model. Using the calculator provided on the Responsible Purchasing Network website (www.ResponsiblePurchasing.org), the true total cost of this hybrid over its useful life is only $2,174 or 13% above the cost of the gasoline-only version. Given this information, if a policy was in place that alternative fuel vehicles were to be given a 15% pricing preference, this lifecycle cost analysis would allow for the purchase of the vehicle within policy.

   Similar comparisons can be made for products such as compact fluorescent lamps (CFL), which initially cost as much as seven times more than the cost of an incandescent lamp, but are much more energy efficient and longer lasting. As a result, the lifecycle cost of operating a CFL is actually approximately one-fifth of the cost of the incandescent lamp.

   Cost: $ Feasibility Rating: 1

Ultimately, the City's procurement practices should continue to allow the maximum amount of flexibility and should encourage expanded procurement of green products and services where opportunities exist. A rigid pricing policy is not necessary. Additionally, existing environmental labeling and certification programs can help guide our purchasing decisions. These labels and certifications (Energy Star, Green Seal, etc.) simplify the procurement process by allowing the City to purchase eco-products without having to perform complex analyses. Finally, because some manufacturers may label their products green when in reality they are not, these certifications provide assurance that we are actually making a difference with our purchases.

Evaluate additional environmentally friendly products and services

Examine the following categories and types of products as we continue to enhance our green product portfolio:

Supplies

- Recycled copy paper from 100% post consumer waste (use 35% currently)
- Remanufactured laser toner cartridges
- Rechargeable batteries
- Biodegradable food service plates, utensils, and refuse bags
- Eliminate individual-serving bottled water
- Eliminate the use of Styrofoam products

Fleet

- Biodiesel (see also the Transportation and Parking section)
- Retreaded/recycled tires
- Re-refined motor oils and coolants
- Vehicles that have the capability to accept alternative, blended fuels for future use

Infrastructure

- Rubberized asphalt or other recycled street materials
- Wood products that are certified to be sustainably harvested

Facilities

- Air hand dryers for restroom use in lieu of paper towels
- Low-polluting office equipment such as printers
- Standardize on Green computer workstations

Landscape Products

- Environmentally friendly pesticides
- Drought-tolerant plants

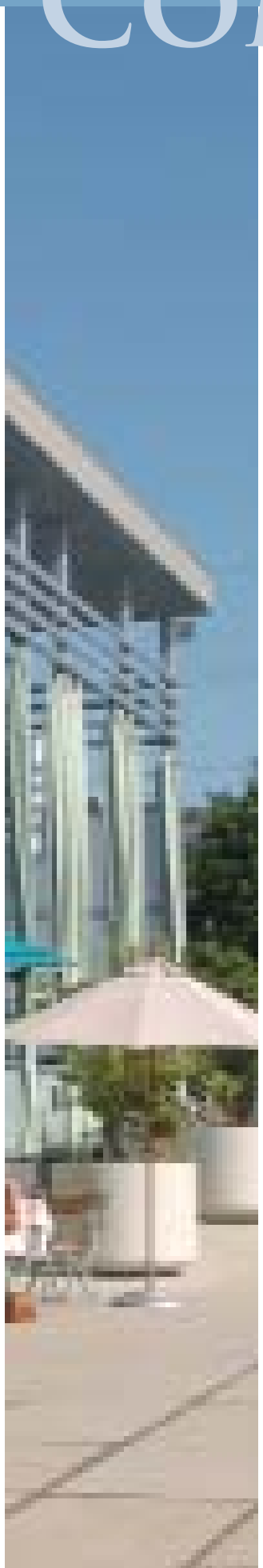
Supplier Relations

- Encourage suppliers to take back and reuse packaging materials
- Require suppliers to take back equipment for reuse, refurbishment or recycling
- Require printed materials to be on recycled paper and labeled accordingly
- Require bids and proposals to be submitted in electronic format, when practical; or, require any written materials to be printed double-sided.

Many of the products and services listed above can be implemented at low to moderate costs, although further cost-benefit analyses will need to be performed to fully understand the financial impacts to the City.

Cost: $ Feasibility Rating: 1

Community Involvement



Developing a Structure for Implementation

As part of this report, the Green Team was tasked with developing models of community involvement for our future "green" initiatives. As documented throughout this report, the responsibility for implementing comprehensive environmental improvements, which range from energy conservation to green procurement, currently spans across all City departments and will, in the future, require the continued and coordinated support of these departments, the private sector, and residents. The ultimate success of the City's green initiatives is not solely dependent on our municipal efforts, but will necessitate involving the private sector and effectively educating our community about the collective impact of individual citizen and business actions.

Due to the broad range of issues and the complex political and practical considerations required for achieving our environmental goals, the Green Team recommends that City Council create a formal commission as one of the first steps toward managing and providing focus to this multifaceted effort. As envisioned, the environmental commission would:

- Advise Council on environmental policies and programs
- Recommend priority areas for "green" improvements
- Guide creation of a Climate Action Plan as a part of an overall Environmental City Plan
- Review status and progress reports related to the environmental plans
- Guide development of further roles for community involvement

Other Notable Programs

Many cities across the country have formed city-supported environmental groups as an important step to involve and engage their communities. During our research for this report, we found the two primary models of city-supported environmental groups are: 1) commissions, which are usually more formal, have defined membership, serve as an advisory body for a broad range of issues and have standing meeting schedules, and 2) committees, which are usually less formal, have memberships that may fluctuate, address more narrowly-focused issues and have ad-hoc meeting schedules.

Our research indicates that the more formal commission model is best suited for serving as an advisory body and is especially appropriate if the assigned responsibility will cover a broad range of issues. The committee

model is best suited for guiding research and making recommendations related to narrowly defined issues and program specific actions. Due to the comprehensive and ongoing nature of the environmental initiatives the City of Manhattan Beach will be addressing, staff recommends establishing a new permanent environmental commission.

Commissions

An example of a formal and permanent environmental commission is the City of Santa Monica's Task Force on the Environment (this group has the qualities of a commission as described above, but has "task force" as a descriptive name). Established in 1991 by the Santa Monica City Council, the Task Force was created to advise the City Council on environmental programs and policy issues and was the driving force behind the development of Santa Monica's Sustainable City Plan. The Task Force, which meets monthly, is composed of seven members, selected by the City Council, with expertise in specific environmental areas including energy, water, transportation, storm water, waste reduction, land use and public education.

Another example of a formal environmental commission is the Green Ribbon Commission appointed by the Mayor of Seattle, Washington. Mayor Nickels initiated a national effort to tackle climate disruption by spearheading the U.S. Mayors Climate Protection Agreement, with the goal of reducing global warming pollution to seven percent below 1990 levels by 2012. To meet that goal in Seattle, the Green Ribbon Commission, which includes 18 leaders from Seattle's business, labor, non-profit, government and academic communities, was charged with developing local solutions to global climate disruption and guiding the development of a Climate Action Plan. The Commission issued its report and recommendations to Mayor Nickels in March 2006.

Committees

An example of a less-formal environmental committee is the "building" committee in Hermosa Beach. The committee does not have a formal, designated name or appointed members, but has been effective in making sound recommendations regarding a number of "green" building guidelines for development in Hermosa Beach. This committee grew out of the interest and efforts of a handful of energetic and forward thinking architects and builders that are also residents of Hermosa Beach. They began meeting this past spring and gained the support of several Councilmembers and the City Manager. The committee's goal is to generate ideas for specific building guidelines that would be practical and feasible for immediate implementation. The group set a self-imposed sunset term of approximately eight months for their work. Given their goals and short timeframe, they have served as an effective committee focused specifically on building issues, as opposed to a long-term advisory commission.

Programs & Practices for Future Consideration

Consider one of three alternative structures for City and community involvement

Staff has identified three alternative structures for City Council to consider as we move forward with the first step for community involvement.

1. ***Assign environmental responsibilities to an existing commission***

   Manhattan Beach currently has five active Commissions – Cultural Arts, Library, Parking and Public Improvements, Parks and Recreation, and Planning. One possibility is that the environmental responsibilities could be incorporated into the role of one or more of the established Commissions. The benefit of utilizing established commissions is that members and staff liaisons are already in place.

2. ***Establish an "Environmental Committee"***

   The City Council could direct creation of an environmental committee, comprised of interested community members, through announcements and general advertisements. This group would be open to anyone from the community who was interested in working on environmental issues; the group would not likely have a formal advisory role.

3. ***Establish a permanent "Environmental Commission"***

   The City Council could create an Environmental Commission. The commission would serve as an ongoing advisory body to Council on environmental programs and policy issues. Staff believes that there would be several benefits in forming a new permanent commission. Specifically, this action would highlight the importance of environmental issues, allow for a highly visible format for reviewing progress, help keep the community informed of key programs and opportunities, and help maintain momentum and motivation.

   Should Council select this structure, several aspects of the commission would need to be determined, including its size and composition, its formal charge, and area of responsibility and meeting frequency. It should be noted that the commission would require a dedicated staff liaison to communicate between staff and commission members, to conduct research, prepare information and implement program and policy directions.

Once City Council has established a structure for the City's future environmental programs, practices, and community involvement, we recommend that the following actions be considered by that group:

Create an Environmental City Plan to include a Local Climate Action Plan

The goal of the Environmental City Plan would be to provide a road map with specific, measurable goals that will help Manhattan Beach improve and expand upon our current best management practices in all environmental areas. Many cities have had comprehensive environmental plans in place for several years, including Pasadena, San Francisco, Santa Barbara and Santa Monica. Many other cities are in the midst of creating Local Climate Action Plans, as described in the introduction, to achieve greenhouse gas reduction goals.

Define further opportunities for community involvement

Staff recommends that City Council consider charging a newly formed environmental commission with guiding development of specific options for the most effective and productive community involvement in Manhattan Beach.

The Green Team found many examples of business and residential community involvement ranging from a consortium of business leaders in Austin, Texas that call themselves the Clean Energy Incubator and are devoted to helping eight young clean-energy companies succeed, to a Community Gardens Initiative led by a residential horticultural committee in Philadelphia, Pennsylvania. In addition to examples from across the country, we have also identified many opportunities for the City to expand education and outreach efforts to our business and residential communities to help inform and involve them in implementing individual environmental best management practices (see Sustainable Development, Transportation and Parking, Water Usage and Conservation, Urban Forests and Beaches, Solid Waste and Recyclables, and Storm Water Management sections for more information).

With so many options and environmental areas to choose from, our efforts at first may need to be prioritized and, perhaps, focused on those actions with the biggest impact that can take advantage of current, available resources. We recommend holding a City Council Study Session as soon as practical. Council will have an opportunity to review these initiatives in more detail and consider establishing priorities. Specifically, the establishment of a commission and the hiring of staff should be considered early on because of the lead time they will take to get started and their importance to our overall environmental efforts.

Conclusion and Future Actions

Where do we go from here?

When the US Mayor's Climate Protection Agreement was brought to the attention of the City Council, it was meant to be more than just a "feel good" item. Embracing the Agreement would require forward thinking and courageous leadership, as well as a lot of hard work by everyone.

In taking that first step to endorse the US Mayor's Climate Protection Agreement, the City Council truly embraced the concept of "thinking globally and acting locally" by going far beyond any one environmental concern such as global warming. Instead, the City Council asked to learn about the breadth of measures we can take now to save our environment and eliminate the practices that pollute our ocean and beaches and destroy our limited natural resources.

Over the past six months, City staff met regularly and compiled information about the City's past and current environmentally- friendly practices in the areas of global warming, energy use, waste reduction, storm water management, transportation, water conservation, procurement, community involvement and sustainable buildings.

While the City's current environmental practices will continue, we can certainly do more. The results of this study will set the stage for the City to not only to track its past and current practices, but also our future efforts. Further, it will also allow us to set goals and be held accountable for our actions such that we can truly make a positive environmental impact in the future.

> The Green Team is proud to be part of what will undoubtedly become the City's great environmental legacy for future generations.

This project has also allowed City staff to meet and work with many other entities in and around the South Bay who are also working on a brighter and cleaner tomorrow. The energy, passion and optimism of this growing movement is contagious, as it is sweeping not only the South Bay, but also the County, State and Nation as well.

So, as City Council ponders the question, "Where do we go from here", staff has identified a variety of "programs and practices for future consideration," along with some preliminary cost indicators and our perception of the difficulties associated with implementation. The list is in no way exhaustive; through innovative thinking, there are so many more ideas to consider. However, it is important to keep in mind that what is a best practice in some cities may not be an appropriate best practice in Manhattan Beach. Additionally, the costs relative to the environmental improvements gained must be weighed for each action considered.

In the nearly six months it took to generate this report, the Green Team and City staff have worked countless hours compiling data while delaying other work assignments.

Clearly, this document identifies the broadness and complexities of the issues involved and the need for community support. For the City's future efforts to be effectively tracked and evaluated, and for best practices to be studied and brought back to City Council for consideration, staff strongly recommends: 1) the formation of a commission/committee, and 2) a full-time environmental administrator position be created. This person would also be responsible for:

- Producing an Annual Environmental Report
- Formulating a Local Climate Action Plan and/or Environment Strategic Plan
- Coordinating all City department environmental efforts
- Acting as the staff liaison with other internal and external entities, such as a Council appointed commission and community interest groups
- Coordinating an environmental bulletin board in City Hall
- Creating and maintaining an environmental City webpage
- Writing a regular "green" article in the quarterly City newsletter

As the environmental issues and future actions identified in this first report are brought forth to City Council in more detail, one thing to keep in mind is that the City has already pledged to develop a local action plan to reduce the City's greenhouse gas emissions to 7% below 1990 levels by the year 2012 (under the US Mayor's Climate Protection Agreement and the Climate Protection Campaign, and as outlined in the Kyoto Protocal).

In a more global fashion, City Council may also direct staff to create an environmental strategic plan, one which addresses all aspects of our environment rather than only the City's greenhouse gas reduction commitment. Given the complexities of all the issues identified in this report, it is likely that each environmental topic presented here will have to be thoroughly evaluated to fully understand costs, benefits, conflicts, support, and potential for implementation.

The Green Team hopes that this report provides City Council a comprehensive summary of the efforts the City has taken to become more environmentally friendly, as well as provide a glimpse of what the future may hold for a greater and greener Manhattan Beach. Clearly, there will be many difficult decisions and a lot of hard work ahead of us. On that note, we leave you with a quote regarding our feathered friends in the sky:

> "There is nothing in which the birds differ more from man than the way in which they can build and yet leave a landscape as it was before."
>
> ~ Robert Wilson Lynd

Appendix One

Summary of Future Considerations

As mentioned in the introduction, cost and feasibility ratings were given to 61 of the actions identified in this report for future consideration. A snap shot summary of the actions and their ratings is provided in the table below as a single point of reference. Although the ratings were subjectively assigned by the Green Team, they do provide an initial starting point for discussing and evaluating where we may want to initially focus our efforts toward becoming a greater, greener Manhattan Beach.

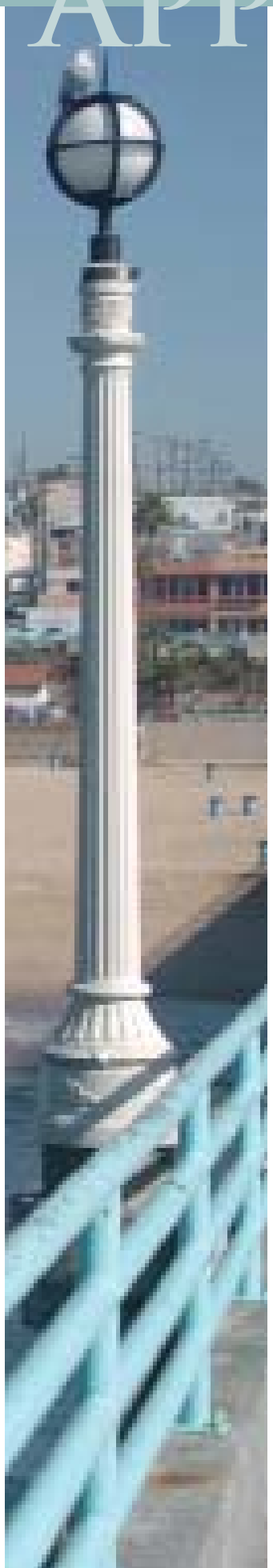
To recap, cost considerations included equipment, resources, staff time, operations, capital expenditures and other tangible items. Feasibility (ease) of implementation considerations included public acceptance, conflicting environmental concerns, infrastructure, practicality and intangible concepts. The following scales were used in the rating system.

$	Little to No Cost	1	Very Easy to Implement
$$	Low Cost	2	Somewhat Easy to Implement
$$$	Moderate Cost	3	Challenging to Implement
$$$$	Costly	4	Difficult to Implement
$$$$$	Very Costly or Cost Prohibitive	5	Extremely Difficult to Implement

		Cost	Feasibility
Energy Use at City Facilities			
1.	Increase use of energy-efficient lighting	$$	1
2.	Install daylighting controls and occupancy sensors	$$	1
3.	Improve central building management and monitoring	$$$	2
4.	Reduce energy consumption from appliances and other electronic devices	$	2
5.	Consider solar power applications	$$$$	1
6.	Consider supporting the development of green sources of energy	$$	1
Vehicle Fleet and Fuel Usage			
1.	Continue to replace traditional vehicles with alternative fuel types	$$	1
2.	Consider more stringent requirements than those identified in SCAQMD Rule 1193	$$	1
3.	Create a regional alternative fueling station	$$$$$	4
4.	Consider using bio-diesel in City fleet vehicles with unmodified diesel engines	$$	1
Traffic Controls and Streetlights			
1.	Upgrade all traffic signals with LED lighting or equivalent types	$$	3
2.	Expand the Intelligent Traffic Corridor Program	$$$	2
3.	Reassess City street lighting needs	$$	1
4.	Explore lighting alternatives for the Gas Lamp District	$$	4
Sustainable Development			
1.	Embrace sustainable construction practices of public facilities	$$$	1
2.	Consider a three-pronged program to promote sustainable development		
	a) Utilize appropriate educational opportunities • *Implement outreach programs* • *Promote residential and commercial sustainable building techniques*	$$$	1
	b) Evaluate and adopt appropriate incentives	$$$	3
	c) Legislate compliance	$$$	3
3.	Promote residential use of gray water systems	$$$$	4
4.	Promote the capture and use of rainwater for commercial landscape irrigation	$$$$	3
Transportation and Parking			
1.	Encourage parking for fuel efficient vehicles	$$	2
2.	Consider implementing an alternative work schedule	$	3
3.	Increase parking fees	$	4
4.	Prohibit drive-thrus	$	3
5.	Promote pedestrian walking program	$$	1
6.	Expand transit services	$$$$	2
7.	Review stop sign criteria	$	4
Water Usage and Conservation			
1.	Reduce potable water demands	$$	3
2.	Increase reclaimed water usage	$$$$	1
3.	Adopt water conservation measures		
	a) Revise the City's Water Use and Conservation Ordinance	$$$	2
	b) Adopt a tiered rate structure	$	3
	c) Expand City services regarding education and financial incentives	$$$	1
	d) Convert the City's high use, water-intensive, athletic fields to synthetic turf	$$$$$	1

		Cost	Feasibility
Urban Forests and Beaches			
1.	Perform a water audit; consider contracting water management services	$$$	1
2.	Select more drought tolerant plants	$	3
3.	Consider a public awareness campaign promoting natural, sustainable landscapes	$$$	1
Solid Waste and Recyclables			
1.	Consider adopting a fee-based structure for solid waste collection	$$	3
2.	Implement a Styrofoam waste reduction program	$$$	2
3.	Prohibit the use of plastic bags in grocery stores	$$	4
4.	Improve community recycling and waste reduction efforts	$$$	1
5.	Enhance multi-family dwelling recycling efforts	$$$	1
6.	Improve the amount of construction waste recycled	$$$$	2
7.	Promote recycled goods	$$$	1
8.	Promote business "Green Management Plans"	$$$	1
9.	Enhance green waste programs	$$$	1
10.	Enhance household hazardous waste programs	$$$	1
11.	Enhance education programs	$$$	1
Storm Water Management			
1.	Ensure street sweeping signs are installed on all City streets	$	3
2.	In high priority areas of the City, install devices to reduce or eliminate trash from entering the storm drain system and/or reaching the ocean.	$$$	1
3.	Evaluate additional opportunities to divert contaminated dry weather flows	$$$	1
4.	Evaluate additional storm water infiltration opportunities	$$$	1
5.	Enhance the City's current business inspection program for key sectors	$$$	1
6.	Increase enforcement and monitoring to reduce illicit discharges	$$	2
7.	Evaluate opportunities to upgrade City facilities and/or operations to reduce contaminated runoff	$$$$	1
8.	Consider further modifications to municipal and building code requirements that effectively target pollutants of concern	$$$	3
9.	Consider establishing a revenue stream to support the implementation of storm water pollution control requirements	$$	3
Procurement Policies			
1.	Develop environmentally friendly procurement policies		
	a) Evaluate the price differential between environmentally preferable products and standard products.	$$	1
	b) Consider environmentally friendly products with cost as a secondary criterion	$$	1
	c) Consider pricing preference, whereby all products compete on price or value	$	1
	d) Consider lifecycle cost analysis to assist in selecting goods and services	$	1
2.	Evaluate additional environmentally friendly products and services	$	1

Appendix Two



Emissions Data

Calculation of the City's total greenhouse gas emissions is a critical first step toward understanding how our municipal government operations contribute to global warming and what measures we can take to reduce our overall CO_2 emissions.

To calculate our municipal greenhouse gas emissions, City staff first collected 2005 utility and energy consumption data, such as the amount of electricity used in City facilities, the amount of fuel used in City Fleets and other operations, the number of miles employees commute to and from work, how much waste we generate that goes to landfills, etc. 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.

This data was then entered into a software program created by the International Council for Local Environmental Initiatives (ICLEI) and the Environmental Protection Agency, known as the Clean Air and Climate Protection Software. The program uses regionally specific factors to calculate/estimate greenhouse gas emissions based on the data entered.

While the software has the capability to calculate both government and community emissions, given our limited time and resources, staff evaluated only the impacts from government operations.

2005 Sources of Government Emissions, Summary

Sources of Emissions	Equiv CO2 (tons)	Equiv. CO2 (%)	Energy (MMBTU)
City-operated Facilities and Parks	1,680	26.9	12,194
Traffic Signals and Streetlights	904	14.5	4,660
Employee Commute	1,054	16.9	12,319
Water/Sewer Pump Stations	961	15.4	6,190
Vehicle Fleet Fuel Usage	1,646	26.3	19,276
2005 Government Emissions Total	**6,245**	**100**	**54,638**

2005 Sources of Government Emissions, by Top Producers of CO_2

Total Government Source	Type of Energy	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Employee Commute	Gasoline	1,054	16.9	12,319
City Fleet (gasoline)	Gasoline	954	15.3	11,151
Water Pump Stations	Electricity	867	13.9	5,584
Streetlights (electric)	Electricity	607	9.7	3,911
City Hall	Electricity	424	6.8	2,730
Waste Management (diesel)	Diesel	262	4.2	3,018
City Fleet (diesel)	Diesel	205	3.3	2,366
Parking Garage - Metlox	Electricity	200	3.2	1,288
Streetlights (natural gas)	Natural Gas	180	2.9	0
City Buildings (natural gas)	Natural Gas	141	2.3	2,289
Traffic Control	Electricity	116	1.9	749
Pier	Electricity	103	1.7	666
Public Works Yard	Electricity	96	1.5	621
Tru Green (gasoline)	Gasoline	96	1.5	1,130
Live Oak Park	Electricity	84	1.3	541
Marine Avenue Sports Complex	Electricity	81	1.3	521
Clean Street (diesel)	Diesel	71	1.1	817
Sewer Pump Stations	Electricity	61	1.0	392
Joslyn Community Center	Electricity	59	0.9	379
Marine Avenue Park	Electricity	58	0.9	374
Irrigation Control	Electricity	55	0.9	353
Manhattan Heights	Electricity	54	0.9	347
Parking Lot 3	Electricity	54	0.9	344
Police Facility	Electricity	40	0.6	256
Polliwog Park	Electricity	33	0.5	210
Storm Water	Electricity	33	0.5	214
Post Office Annex / Chamber	Electricity	32	0.5	205
Mira Costa Tennis Courts	Electricity	27	0.4	173
City Fleet (compressed natural gas)	CNG	27	0.4	423
Creative Arts Center	Electricity	24	0.4	157
Fire Station 1	Electricity	22	0.4	143
Fire Station 2	Electricity	22	0.4	144
Manhattan Village Soccer Fields	Electricity	22	0.4	141
Tru Green (diesel)	Diesel	19	0.3	220
Begg Field Lights	Electricity	14	0.2	93
Parking Lot 4	Electricity	12	0.2	79
Sand Dune Park	Electricity	10	0.2	64
Clean Street Fleet (liquid propane gas)	LPG	9	0.1	124
Parking Lot 2	Electricity	5	0.1	30
Parking Lot - Other	Electricity	3	0.0	19
Parking Lot - El Porto	Electricity	3	0.0	16
Parks - Other	Electricity	2	0.0	11
Waste Management (compressed natural gas)	CNG	2	0.0	27

2005 Sources of Government Emissions, by Category

City Facilities and Parks	Type of Energy	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Begg Field Lights	Electricity	14	0.2	93
City Hall - 1400 Highland Ave	Electricity	424	6.8	2,730
Creative Arts Center	Electricity	24	0.4	157
Fire Station 1	Electricity	22	0.4	143
Fire Station 2	Electricity	22	0.4	144
Irrigation	Electricity	55	0.9	353
Joslyn Community Center	Electricity	59	0.9	379
Live Oak Park	Electricity	84	1.3	541
Manhattan Heights	Electricity	54	0.9	347
Manhattan Village Soccer Fields	Electricity	22	0.4	141
Marine Avenue Park	Electricity	58	0.9	374
Marine Avenue Sports Complex	Electricity	81	1.3	521
Mira Costa Tennis Courts	Electricity	27	0.4	173
Parking - Other	Electricity	3	0.0	19
Parking Garage - Metlox	Electricity	200	3.2	1,288
Parking Lot - El Porto	Electricity	3	0.0	16
Parking Lot 2	Electricity	5	0.1	30
Parking Lot 3	Electricity	54	0.9	344
Parking Lot 4	Electricity	12	0.2	79
Parks - Other	Electricity	2	0.0	11
Pier	Electricity	103	1.7	666
Police Facility	Electricity	40	0.6	256
Polliwog Park	Electricity	33	0.5	210
Post Office Annex / Chamber	Electricity	32	0.5	205
Public Works Yard - 3621 Bell	Electricity	96	1.5	621
Sand Dune Park	Electricity	10	0.2	64
Natural Gas - All City buildings	Natural Gas	141	2.3	2,289
	SUBTOTAL:	**1,680**	**26.9**	**12,194**

Note: Data obtained from our local electricity and natural gas providers.

The City's top contributors to greenhouse gas emissions in 2005 were operational facilities, which included City administration buildings, recreation facilities, parking lots, and parks. Combined, they generated 27% of the City's total CO_2 emissions.

Traffic Controls and Streetlights	Type of Energy	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Traffic Controls/Signals	Electricity	116	1.9	749
Streetlights (electricity)	Electricity	607	9.7	3,911
Streetlights (natural gas)	Natural Gas	180	2.9	0
	SUBTOTAL:	**904**	**14.5**	**4,660**

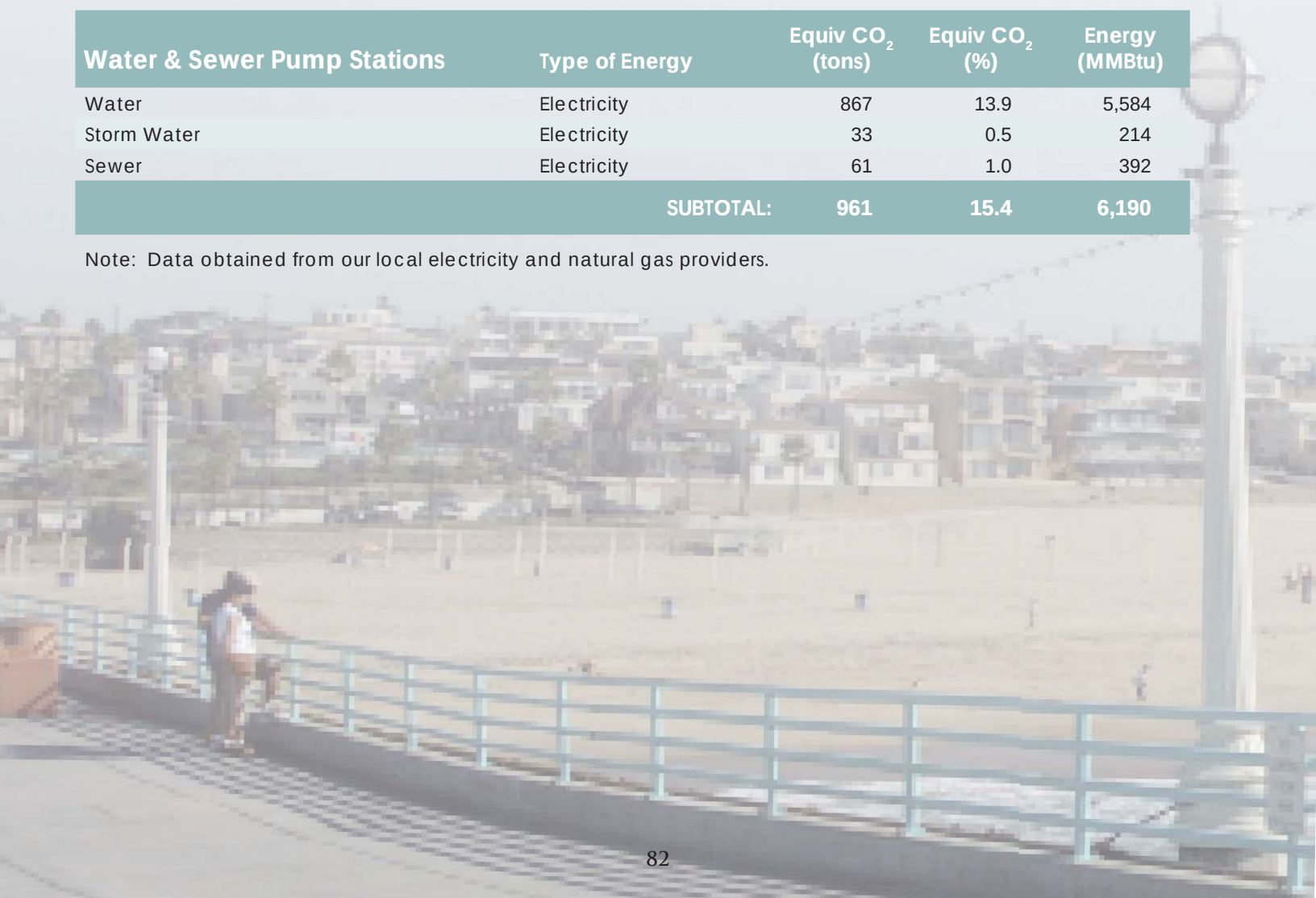
Note: Data obtained from our local electricity and natural gas providers.

Employee Commute	Type of Energy	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
City Employee Commute Miles	Gasoline	1,054	16.9	12,319
	SUBTOTAL:	**1,054**	**16.9**	**12,319**

Note: Data obtained through *Employee Commute Survey* distributed to full and part time City employees.

Water & Sewer Pump Stations	Type of Energy	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Water	Electricity	867	13.9	5,584
Storm Water	Electricity	33	0.5	214
Sewer	Electricity	61	1.0	392
	SUBTOTAL:	**961**	**15.4**	**6,190**

Note: Data obtained from our local electricity and natural gas providers.



Fuel Usage	Type of Energy	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
City Fleet	Gasoline	954	15.4	11,151
	Compressed Natural Gas	27	0.4	423
	Diesel	205	3.3	2,366
Waste Management Fleet	Compressed Natural Gas	2	0	27
	Diesel	262	4.2	3,018
CleanStreet Fleet	Diesel	71	1.1	817
	LPG	9	0.1	124
Tru Green Fleet	Gasoline	96	1.5	1,130
	Diesel	19	0.3	220
	SUBTOTAL:	**1,646**	**26.3**	**19,276**

Notes: City fleet fuel usage was provided by the City's Department of Public Works. Our contract service providers, Waste Management, CleanStreet and Tru Green provided the data above, respectively.

A note about solid waste generation / landfilling

Another relevant category in the ICLEI software included the emissions generated from solid waste produced by City employees at City facilities. This was included in the study because landfills release methane into the atmosphere. Although the waste collected within the City is disposed of at landfills located outside the community, Manhattan Beach is still the initial waste generator. However, the City's 2005 waste emissions were negligible because the recipient landfill captured approximately 50% of the methane released and converted it into new, usable energy. Based on the software calculations, the positive energy generated by the methane capture negates the negative CO_2 emissions, resulting in a net zero value for waste emissions.

References & AC

Local and National Organizations

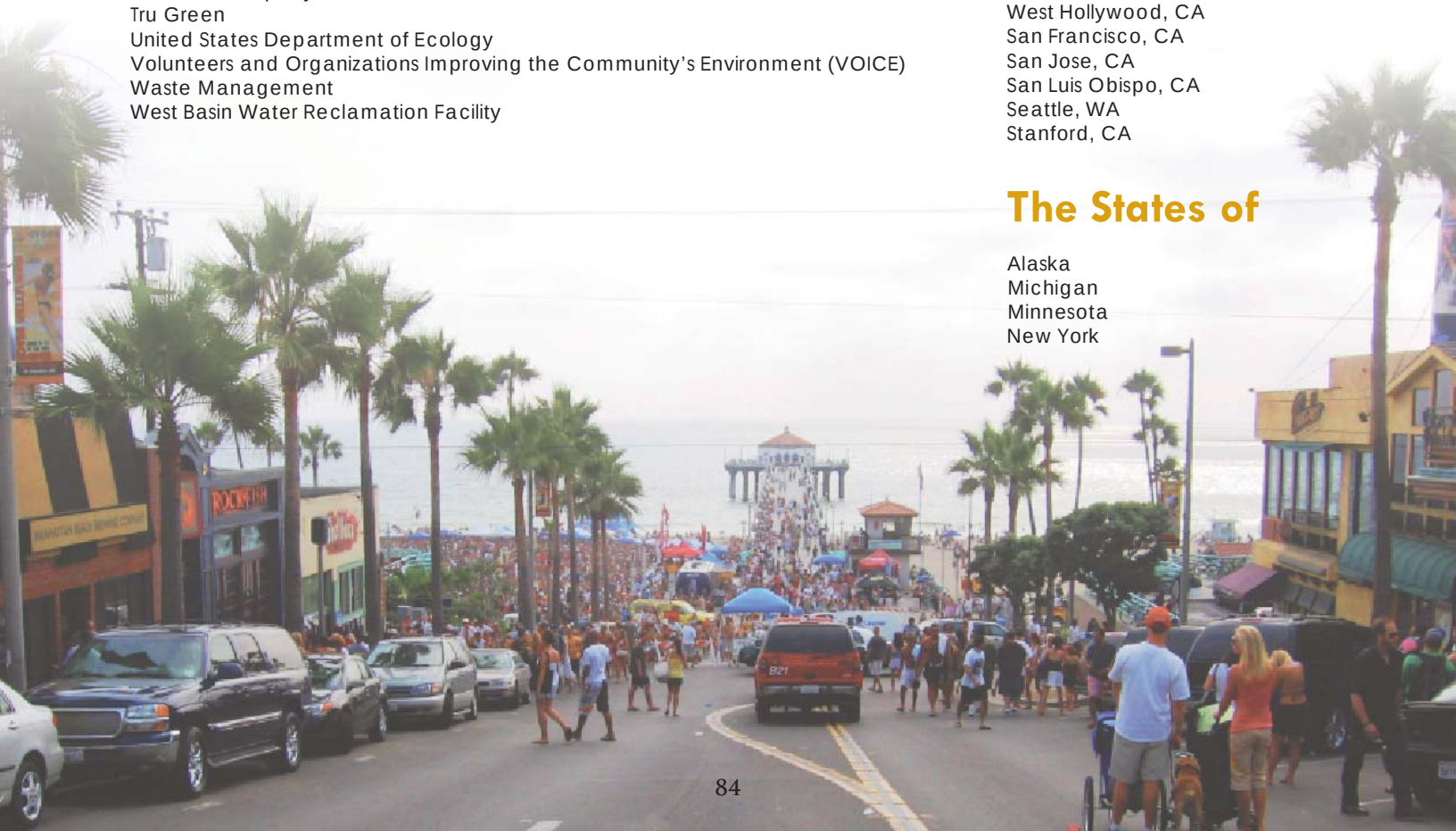
Build It Green
California Department of General Services
California Integrated Waste Management Board
California State Department of Conservation
CDS Technologies
Chlorine-free Products Association
Clean Street
Climb Theaters
County of Los Angeles
Electronic Product Environmental Assessment
Green Seal
Greenguard Environmental Institute
HOK Architecture
International Council of Local Environmental Initiatives
Lean Architects
Los Angeles County Department of Public Works
Los Angeles County Fire Department, Lifeguard Division
Los Angeles County Sanitation District
Manhattan Beach School District
Metropolitan Water District
Natural Resource Defense Council
North American Green Purchasing Initiative
Regional Water Quality Control Board
Responsible Purchasing Network
Santa Monica Bay Restoration Commission
South Coast Air Quality Management District (SCAQMD)
Southern California Edison
The Gas Company
Tru Green
United States Department of Ecology
Volunteers and Organizations Improving the Community's Environment (VOICE)
Waste Management
West Basin Water Reclamation Facility

Municipalities

Beverly Hills, CA
Brentwood, CA
Burbank, CA
Carlsbad, CA
Culver City, CA
Davis, CA
Downey, CA
Elk Grove, CA
El Segundo, CA
Hermosa Beach, CA
Inglewood, CA
Kirkland, WA
Long Beach, CA
Los Angeles, CA
Mariposa, CA
Menlo Park, CA
Monterey, CA
Norco, CA
Palos Verdes Estates, CA
Pasadena, CA
Palo Alto, CA
Rancho Palos Verdes, CA
Redondo Beach, CA
Rohnert Park, CA
Rolling Hills Estates, CA
Santa Monica, CA
Santa Barbara, CA
Torrance, CA
West Hollywood, CA
San Francisco, CA
San Jose, CA
San Luis Obispo, CA
Seattle, WA
Stanford, CA

The States of

Alaska
Michigan
Minnesota
New York



KNOWLEDGEMENTS

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