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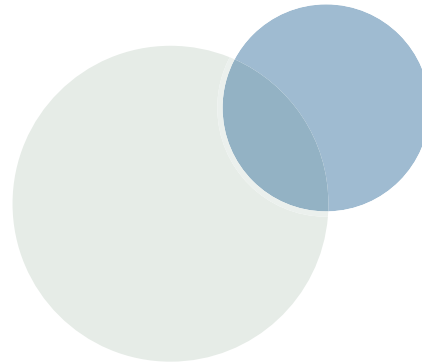
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This program is funded by the California utility ratepayers under the auspices of the California Public Utilities Commission.

Este programa esta financiado por los usuarios de servicios públicos en California bajo la jurisdicción de la Comisión de Servicios de California.

Sincere appreciation is extended to the members of the Climate Protection Action Plan Ad Hoc Advisory Committee, who volunteered their time and energy to advance recommendations for reducing greenhouse gas emissions.

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Executive Summary for the Climate Protection Action Plan

Global Warming is real. As Kurt M. Cuffey, a professor of geography at UC Berkeley, wrote in the *San Francisco Chronicle*: “Mounting evidence has forced an end to any serious scientific debate on whether humans are causing global warming... There is now no reasonable doubt that atmospheric pollution is causing global warming, and this warming is strong enough to have serious consequences in the next century.”

The City of San Diego is taking a leadership position in the pursuit against climate change. In 2002, the San Diego City Council unanimously approved the San Diego Sustainable Community Program. Actions of the Program include:

- Participation in the Cities for Climate Protection (CCP) program coordinated through the International Council of Local Environmental Initiatives (ICLEI);
- Establishment of a 15% GHG reduction goal set for 2010; and
- Direction to use the recommendations of a scientific *Ad Hoc* Advisory Committee as a means to improve the GHG Emission Reduction Action Plan within the City organization and to identify additional community actions.

Investing in actions and institutionalizing policies to battle global warming by reducing greenhouse gas (GHG) emissions have collateral benefits for San Diego: economic vitality; public health and safety; natural resource protection; and infrastructure stability. Just as importantly, the City of San Diego's leadership may catalyze significant reductions of GHG emissions by others in the region. Regardless of national policies on global climate change, each town, city, and region can choose to do what is feasible. The collective impact of these actions can make a substantial difference.

Consequences of Climate Change

The impacts of climate change and global warming are felt worldwide. Policy development for the City of San Diego must take into account international, national, and state impacts and concerns while considering how to proceed on a local level. The

following characteristics of the San Diego region affect its vulnerability to climate change:

- increasing population
- urban sprawl
- 52 miles of shoreline
- reliance on imported energy and water
- vulnerable economic sectors—agriculture and tourism

The relationship of these factors to increasing GHG emissions is the ever-growing imbalance of “sinks” and “sources” of CO₂ emissions. By 2030, the San Diego-Tijuana region’s population is expected to soar to 8 million, which is almost double the 2003 population. San Diego’s growth may outstrip current infrastructure planning, financing capabilities, and available land, especially if the pattern of sprawl continues. Sprawling development consumes otherwise natural land, is less energy-efficient, and contributes to the “urban heat island effect.” Urban heat island is caused by the removal of vegetation and an increase in urbanization, and can lead to increased temperatures, changes in weather patterns, and air-quality problems, especially with ground-level ozone.

Along much of California’s coast, sea level already is rising by 3–8 inches per century. Sea level is likely to rise by another 13–19 inches by 2100. Sea level rise could lead to flooding of low-lying property, loss of coastal wetlands, erosion of beaches, and decreased longevity of low-lying roads, causeways, and bridges. In addition, sea level rise could increase the vulnerability of coastal areas to storms and associated flooding.

Currently the San Diego Region meets its regional water demands through costly and distant imported sources, which account for more than 95% of the regional water supply. Approximately 50% of San Diego’s fresh water is used for non-drinking purposes such as landscape irrigation, commercial enterprise, and industrial processing. Given this heavy dependence on imported water, it is not surprising that almost 60% of the energy used by the City of San Diego goes for pumping water and sewage. As San Diego’s population continues to grow, its energy needs will increase accordingly. As with water, San Diego depends on imported power, which is generated primarily from out of state, including hydroelectric plants in Northern California and the Pacific Northwest. Disruptions in

water supplies and changes in the snow pack due to global warming could affect the availability of hydroelectric power, forcing San Diego to look to other sources.

The economic effects of global warming in San Diego could threaten some of our most important industries, in particular tourism and agriculture. Dramatic sea-level rises may threaten the San Diego coastline, a major tourist draw. Weather disturbances or water shortages caused by global warming could disrupt water supplies, cause variations in crop quality and yield, or destroy crops. Climate change can also alter the abundance and distribution of pests and pathogens, as well as affect the opportunities for sequestration. Higher temperatures could result in increased electricity demand for cooling, adding to troposphere ozone and pollution. Global warming also has public health effects that are associated most closely with ground-level ozone pollution. The level of ozone pollution found in the San Diego region exceeds the State air pollution requirements. Ozone is formed when emissions such as car exhaust reacts with heat. More specifically, it is the volatile organic compounds (VOC) and nitrogen oxides (NOX) in the emissions that are converted into ozone in the presence of sunlight. Increases in overall temperatures and number of hot days in the region, due to global warming, and increases in car exhaust will result in even higher levels of ozone production. Children and those who are employed in outdoor occupations or who exercise heavily outdoors, experience substantially greater exposures to ozone than the rest of the population, because they are exposed during peak ozone periods. Research indicated that the previous air pollution standard was not sufficiently protective of human health. Therefore, at its April 28, 2005, public hearing, the California Air Resources Board approved amendments to sections 70100, 70100.1, and 70200, title 17, California Code of Regulations (CCR), which established a new 8-hour-average standard for ozone at 0.070 parts per million (ppm) and retained the existing 1-hour-average standard for ozone of 0.09 ppm.



Action Plan Development

The development of the *Climate Protection Action Plan* describes what San Diego can do to achieve target greenhouse gas reduction. As part of the CCP campaign, member cities have committed to:

- inventory their emissions of greenhouse gases;
- set reduction targets;
- develop comprehensive strategies to meet these targets;
- implement these emissions reduction actions; and
- measure the results.

The criteria set by the CCP campaign have been used to define the scope and presentation of the Climate Protection Action Plan. The Plan also includes recommendations provided by the *Ad Hoc* Advisory Committee and City staff. By implementing these recommendations the City could directly address the following challenges:

- Mitigation for State and Federal Ozone Standards non-attainment, with associated health benefits ; and
- Enhanced economic prosperity, specifically related to the tourism and agricultural sectors.

Creating an action plan for combating climate change requires four basic steps:

- 1) Understand the current situation
- 2) Establish a future goal
- 3) Develop actions to achieve that goal
- 4) Devise indicators to measure progress towards the goal

The first step in developing the Climate Protection Action Plan was to conduct a baseline inventory of greenhouse gas emissions to understand the current situation. A 15% reduction target, relative to 1990, was then set as a future goal. Driven by the

recommendations provided by the *Ad Hoc* Advisory Committee, a specific set of actions to reduce GHG emissions in San Diego has been developed and is the basis of the Climate Protection Action Plan. The indicators included in the San Diego Sustainable Community Program measure progress of emissions reduction. Additional indicators may be necessary to fully measure GHG emission trends.

On January 29, 2002, the San Diego City Council unanimously approved the San Diego Sustainable Community Program. Actions identified include:

1. Participation in the Cities for Climate Protection (CCP) program coordinated through the International Council of Local Environmental Initiatives (ICLEI);
2. Establishment of a 15% GHG reduction goal set for 2010, using 1990 as a baseline; and
3. Direction to use the recommendations of a scientific Ad Hoc Advisory Committee as a means to improve the GHG Emission Reduction Action Plan within the City organization and to identify additional community actions.

This report includes many of the recommendations provided by the Ad Hoc Advisory Committee and City staff. By implementing these recommendations the City could directly address the following challenges:

- Mitigation for State and Federal Ozone Standards non-attainment, with associated health benefits ; and
- Enhanced economic prosperity, specifically related to the tourism and agricultural sectors.

San Diego Communitywide Greenhouse Gas Emissions Inventory

The emissions inventory identifies and classifies major sources and quantities of GHG emissions being produced by City residents, businesses, and municipal operations. The City of San Diego is responsible for about 15.5 million tons of greenhouse gas emissions per year, based on 1990 emissions levels. Of this, only 0.2 million tons is the result of the City government's operations. The majority is generated from the community as a whole. As shown in Table 1, by taking no action to curb these current emissions levels, these this would increase to 22.5 million tons per year by 2010. By adopting a goal of 15% reduction of baseline levels, the City hopes to reduce emissions to 13.2 million tons per year by 2010.

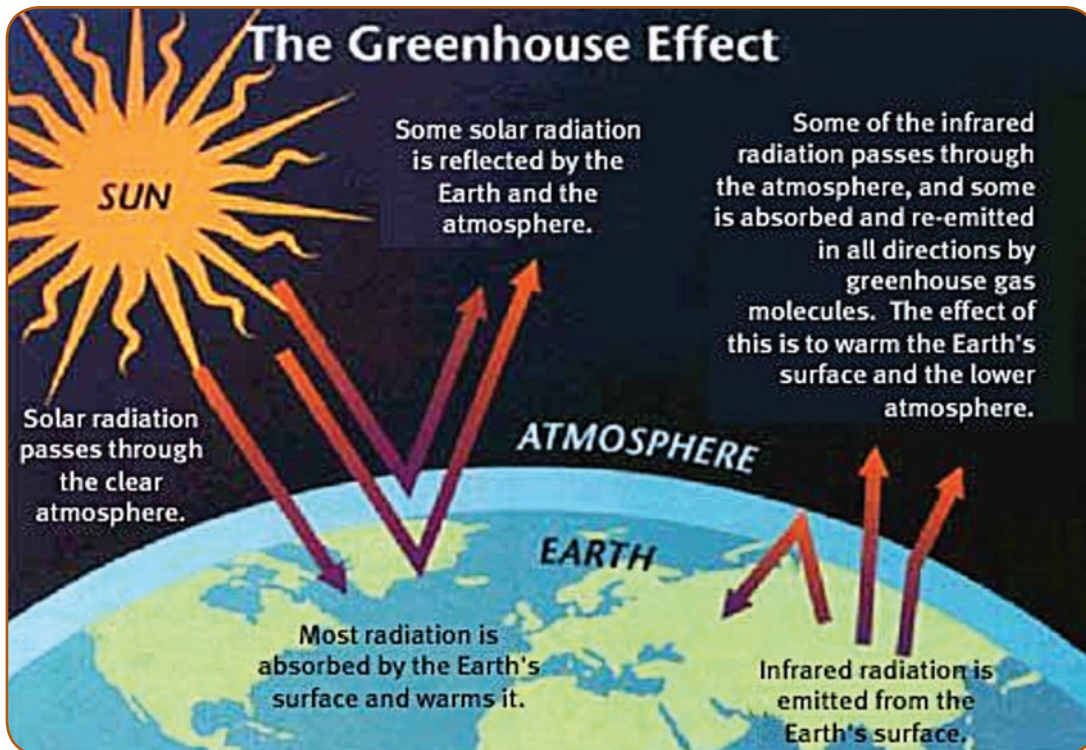
Table 1. San Diego Communitywide Greenhouse Gas Emissions Overview

Milestone	Total Tons of GHG per year
1990 Baseline	15,547,000
2010 "No Action" Projection (Status Quo)	22,517,000
2010 CCP Projection (Goal)	13,215,000
Difference Between Status Quo and Goal	9,302,000
Reduction Achieved from 1990-2003	3,814,000*
Remaining Reduction Needed by 2010	5,488,000

*The cumulative reductions from 1990-2003 have eliminated the listed tonnage of GHG and thus can be assumed to prevent this same amount from accumulating on a per year basis going forward.

The following series lay out three important contentions:

1. Table 2 - The GHG projection in 2010 resulting from no action taken to curb emissions;
2. Table 3 - The GHG emission reductions due to City of San Diego actions implemented between 1990 and 2003; and
3. Figure 1 - 2010 City of San Diego Community Forecast GHG Emissions by Sector



- The greenhouse effect makes the earth warmer by trapping heat in the atmosphere.
- It is called the greenhouse effect because like the glass roof of a greenhouse, the atmosphere keeps most of the heat from the sun from going back into space. This is similar to what happens in a greenhouse.
- This is a good thing because without the greenhouse effect, the earth would not be warm enough for humans to live.
- But, if the greenhouse effect becomes stronger, it could make the earth warmer than usual. Even a little extra warming may cause problems for humans, plants, and animals.

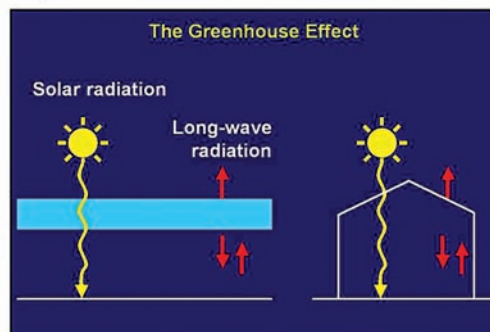


Table 2 shows 1990 baseline and projected 2010 emissions data, as divided into three sectors: Energy, Waste, and Transportation. Table 3 reflects the sector reductions from actions taken by the community from 1990-2003. Actions taken in the waste sector, including the capture of methane gas from solid waste landfills and sewage treatment plants, combined with recycling programs, have resulted in a significant portion of the decrease in overall GHG emissions, as shown in Table 3. Actions taken thus far to incorporate energy efficiency and alternative renewable energy have been impressive, but have contributed much less to the overall reduction goal. The transportation sector remains a significant source of GHG emissions and has had the lowest GHG reductions to date. Thus, the community could stand to benefit greatly from any major reductions in this sector.

Table 2. Community Greenhouse GasGHG Emissions 1990 Baseline and 2010 “No Action” Projection

Source	1990 Baseline % of Total	1990 Baseline Tons/Yr GHG	2010 “No Action” Projection % of Total	2010 “No Action” Projection Tons/Yr GHG
Energy	29%	4,507,000*	43%	9,749,000
Transportation	51%	7,892,000**	40%	8,951,000
Waste	20%	3,148,000***	17%	3,817,000
Totals		15,547,000		22,517,000

*based on SDG&E data for total consumption of electricity and natural gas within the City limits

**based on SANDAG historical data, with the City having 49% of VMT in the San Diego region

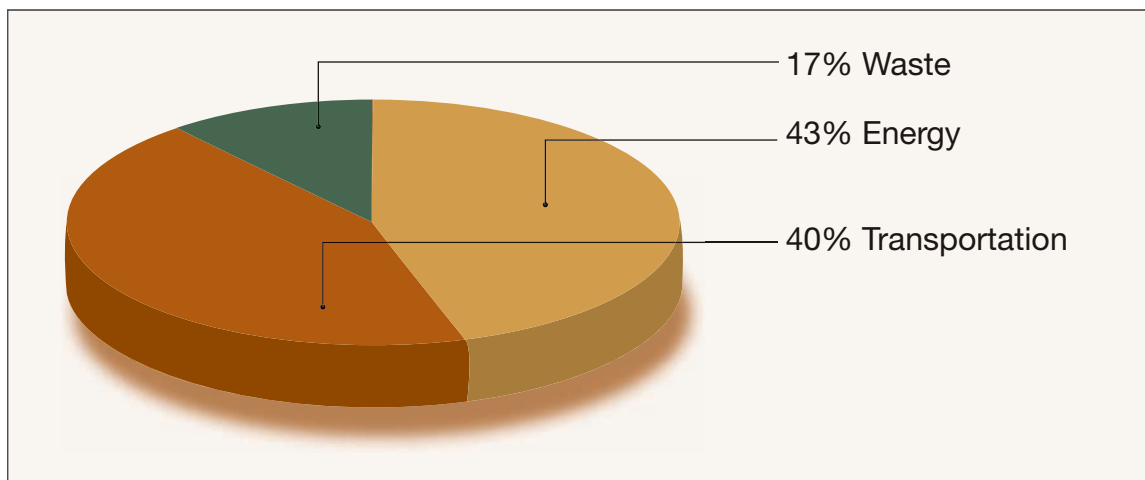
***includes emissions from waste already in landfills some closed, which will diminish over time

The City of San Diego can do more as an organization through policies and practices to reduce the volume of GHG emissions. However, if the largest one-hundred companies in San Diego put forward the same level of commitment, actively working to reduce the GHG emissions associated with their energy, water, and transportation operations, we would be much closer to reaching the 2010 target for the community. With that in mind, the contribution of every individual in the community to reduce energy use and fuel consumption is the final factor that translates the 15% goal into a reality.

Table 3. Community Greenhouse GasGHG Reductions Resulting from 1990-2003 Actions

Source	13-year Cumulative Tons Reduced
Energy	127,000
Transportation	56,000
Waste	3,631,000
Total	3,814,000

Figure 1. 2010 City of San Diego Community Forecast GHG Emissions by Sector



Summary of Recommendations Emissions Reduction Actions

The following is a summary of actions needed to achieve the 15% reduction goal, incorporating the recommendations put forth by the City Manager's Climate Protection Ad Hoc Advisory Committee.

Transportation

The major ways to reduce transportation sector GHG emissions are by reducing fuel consumption and by traveling in vehicles with lower emissions. A common solution for reducing fuel use is to reduce vehicle trips. Reducing trips can be done by encouraging a shift from daily driving to alternative modes such as public transit, ridesharing, bicycling and walking. This would be accomplished through improved services and financial incentives. Vehicle emissions can be reduced by switching to more fuel-efficient or cleaner-fueled vehicles, and by downsizing fleets. The City shall consider the following:

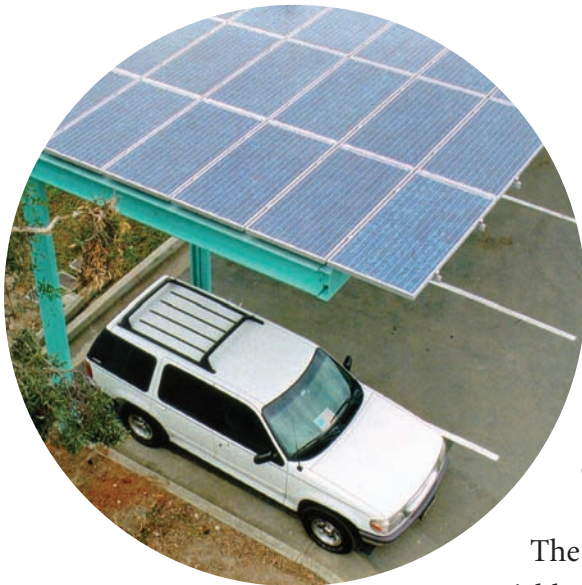


Develop and adopt the *Community Fuel Reduction and Transportation Efficiency Policy* so that:

- City Departments will develop and implement a plan to reduce gasoline fuel consumption in each of 4 light duty vehicle categories by no less than 5%, relative to fleet size, by 2008 (using 2005 as a baseline); and
- The City will provide an information campaign and incentives to encourage the use of vehicles that meet or exceed the Super Ultra Low Emission Vehicle (SULEV) rating.

Energy Efficiency and Renewable Energy

Reducing energy consumption decreases the greenhouse gas emissions associated with the burning of fossil fuels required for energy production. Rebate incentives on certain products can encourage consumers to purchase more energy efficient products that lower energy use and provide long-term cost benefits. Education and outreach programs need to broaden general public and business awareness on energy efficiency practices. Other methods to increase energy efficiency include providing technical assistance and energy management services such as



energy audits and design assistance for residential, commercial and municipal buildings. Resolution R-298412 (R-2004-227), 50-Megawatt Renewable Energy Goal, establishes the goal for adding 50-Megawatts of renewable energy for City operations by 2013. Track and report compliance with Resolution on a quarterly basis.

The market for renewable energy products is increasingly a viable alternative to fossil-fuel derived energy. Initially higher capital costs should be balanced against long term greenhouse gas reduction and lifetime cost savings. Increasing the amount of renewable energy helps to stabilize energy availability, reduce environmental and fiscal costs associated with importing electricity from outside the region, and reduce dependence on foreign oil. The City shall consider the following:

- Implement the 50-Megawatt Renewable Energy Goal, which establishes the goal for adding 50-Megawatts of renewable energy for City operations by 2013.
- Continue to use methane as an energy source from inactive and closed landfills.
- Annually Review and Revise Existing Policies

400-02	Biosolids Beneficial Use
400-11	Action Plan for Implementation of Water Conservation Techniques
900-02	Energy Conservation and Management
900-14	Sustainable Building
900-18	Purchase of Energy Efficient Products

Waste

The City's solid waste disposal efforts revolve around waste diversion from the Miramar Landfill. This includes a variety of programs that include recycling, household hazardous waste collection, and composting. It is preferable to choose products that have minimal packaging to reduce input into the waste stream ("source reduction") or products and packaging that are recyclable or are produced from a significant percentage of post-consumer recycled materials. Expand household recycling and green waste collection, as well as identify new opportunities with local businesses and institutions for recycling and composting. Continue associated outreach and education to encourage full utilization of these services. The City shall consider the following:

- Implement the ***Construction and Demolition Debris (C&D) Diversion Deposit Ordinance***;
- Continue to use methane as an energy source from inactive and closed landfills
- Consider bolder incentives to expand waste minimization efforts:
 - Develop and adopt a construction and demolition recycling ordinance;
 - Develop and adopt a commercial paper recycling ordinance;
 - Develop and adopt a multiple family recycling ordinance.
- Environmentally Preferably Purchasing Policy being implemented on a pilot basis, effective July 1, 2005.



Urban Heat Island

An urban heat island (UHI) is a metropolitan area which is significantly warmer than its surroundings. It is the result of an abundance of dark, hard surfaces in urban areas, which may include roads, sidewalks, parking lots, and roofs. These large collections of dark materials absorb heat from the sun, creating warmer areas. A decrease in vegetation to provide shade and cool the air compounds the heating effect. As a result, ground-level ozone concentrations increase because of the chemical reaction between car exhaust and heat—the more heat, the more ozone is produced. This problem is linked with health risks, and is the reason San Diego is not in compliance with State air pollution requirements. Planting shade trees, use of alternative materials for roads and roofing, and general land use design can help to combat urban heat island effect. The City shall consider the following:



- Develop and Adopt Urban Heat Island Mitigation Policy
- Continue to support the Community Forest Advisory Board and Community Forest Initiative

Adopting the Mayor's goal of planting 5,000 shade trees per year on public property for twenty years would contribute to the mitigation of urban heating, however, more studies are needed to access the specific reductions needed.

- Public Tree Protection Policy
- Annually Review and Revise Existing Policies

200-05	Planting of Trees on City Streets
200-09	Street Tree Plan-Central Business District
400-12	Implementation of Water Reclamation/Reuse
600-23	Open Space Preservation and Maintenance
600-39	Land Guidance

Environmentally Preferable Purchasing

- Develop and Adopt Environmentally Preferably Purchasing Policy

In an effort to address the social, environmental, and economic aspects of sustainability, this policy supports a “triple bottom line” approach. Just as financial accounting is an indicator of an organization’s economic performance (i.e., the bottom line), the triple bottom line approach accounts for social and environmental performance, in addition to the economic. The broad goals of the triple bottom line include ”a clean and productive environment which provides renewable resources and essential life support services; societies which allow everyone access to a good quality of life; and a vibrant economy which works with nature and society“ (Centre for Human Ecology 1998).

- Annually Review and Revise Existing Policies

100-13	Procurement Limitations Adjustments Based on the Consumer Price Index
100-14	Procurement Policy: Recycled Products
900-14	Sustainable Building
900-18	Purchase of Energy Efficient Products

Implementing the Plan

Actions taken thus far will find us 5.5 million tons short of our stated GHG emissions goal for 2010. If we are to reach our reduction target it is imperative that over the next 1-3 years we act to:

- Accelerate and expand existing programs in all areas—transportation, energy efficiency, renewable energy, solid waste, and urban heat island.
- Develop the infrastructure to support new programs.
- Secure resources to implement actions.

- Set up tracking mechanisms and indicators to measure progress.
- Collaborate with other cities through ICLEI's Cities for Climate Protection program.
- Increase outreach and education activities (such as publishing brochures on "simple things you can do" for climate protection).
- Investigate emissions credit trading systems.
- Seek grant funding from sources such as the US Department of Energy, US Environmental Protection Agency (EPA), and California Energy Commission (CEC).
- Document and report progress to decision makers and to the public.

While confronting global warming may seem insurmountable, local and individual action can make a difference. It is imperative that San Diego, a city sensitive to climate change impacts, takes action now to slow its effects. This can only be accomplished by a clear understanding of why climate change is occurring; conscious actions by City leaders and citizens to reduce local sources that are contributing factors; and concerted efforts to increase awareness and encourage action locally and at the state, national, and international levels. Cost-effective solutions to reduce greenhouse gas emissions are available today. However, in order for these solutions to realize their potential, we must make climate protection a priority in our policies, budgets and investments, and personal and organizational actions.

For more information, contact Sustainability@sandiego.gov or visit our website at <http://www.sandiego.gov/environmental-services/sustainable/respect.shtml>