CITY OF PACIFICA
CITY COUNCIL AGENDA

MAYOR PETE DEJARNATT
MAYOR PRO TEM LEN STONE
COUNCILMEMBER SUE DIGRE
COUNCILMEMBER MARY ANN NIHART
COUNCILMEMBER GINNY JAQUITH

COUNCIL CHAMBERS
2212 BEACH BLVD.
PACIFICA, CALIFORNIA 94044

August 1, 2012
www.cityofpacifica.org

SPECIAL MEETING
DRAFT CLIMATE ACTION PLAN STUDY SESSION

OPEN SESSION

6:00 P.M.	Call to Order
1.	Review and Discussion of the Draft Climate Action Plan (DCAP)
2.	Public Comment
ADJOURN	

NOTICE: If you challenge a city's zoning, planning or other decision in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the City Council at, or prior to, the public hearing. Judicial review of any city administrative decision may be had only if a petition is filed with the court not later than the 90th day following the date upon which the decision becomes final. Judicial review of environmental determinations may be subject to a shorter time period for litigation, in certain cases 30 days following the date of final decision.

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HOW TO REACH YOUR LEGISLATORS

- **Governor Jerry Brown, State Capitol Building, Sacramento CA 95814 (916) 445-2841**
- **State Senator Leland Yee, 400 So. El Camino Real, Ste. 630, San Mateo, CA 94402 (650) 340-8840**
- **Assemblymember Jerry Hill, 1528 So. El Camino Real, Ste 302, San Mateo CA 94402 (650) 341-4319**
- **Congresswoman Jackie Speier, 400 So. El Camino Real, Ste 750 San Mateo CA 94402 (650) 342-0300**
- **Senator Barbara Boxer, 1700 Montgomery Street, Ste 240, San Francisco CA 94111 (415) 403-0100**
- **Senator Dianne Feinstein, #1 Post Street, Ste 2450, San Francisco CA 94104 (415) 393-0710**
- **President Barack Obama, 1600 Pennsylvania Ave. NW, Washington DC 20500 (202) 456-1111**

CITY COUNCIL

- **Mayor Peter DeJarnatt, 759 Edgemar, Pacifica, CA 94044 (650-355-5777)**
- **Mayor pro Tem Len Stone, 1005 Terra Nova Blvd. #1 Pacifica, CA 94044 (650-355-5700)**
- **Councilmember Sue Digre, 780 Edgemar, Pacifica, CA 94044 (650-355-4606)**
- **Councilmember Mary Ann Nihart, 146 Hilton, Pacifica, CA 94044 (650-359-7624)**
- **Councilmember Ginny Jaquith, 127 Essex, Pacifica, CA 94044 (650- 355-0805)**

CITY OF PACIFICA
MEMORANDUM

DATE: August 1, 2012

TO: City Council

FROM: Elizabeth Claycomb, Planning Department

SUBJECT: Study Session Regarding the Draft Climate Action Plan (DCAP)

BACKGROUND:

In February 2010, the City Council approved a resolution which generally addressed the subject of climate change and which established a Climate Acton Plan Task Force. (See Resolution No. 07-2010 attached, Exhibit B).

The objective of this resolution was for the citizen Task Force, made up of Council appointed community members, to draft a Climate Action Plan for the City of Pacifica that would appropriately respond to the statutory requirements of the State of California (contained in AB32, SB375 and other related legislation) relative to mandated reductions of green house gas emissions.

Subsequently the City Council appointed the following nine (9) City of Pacifica residents to the Climate Action Plan Task Force:

Mr. Carlos Davidson
Ms. Celeste Langille
Mr. David Rosenheim
Mr. Remi Tan
Mr. Ray Ramos
Mr. Michael Northrop
Mr. Gil Anda
Mr. Timothy Cowan
Mr. Joseph Murphy

In March 2011 the City entered into an agreement with KEMA INC. (DNV KEMA Energy and Sustainability), an environmental planning consultation firm, to assist City staff and the appointed Task Force members in moving the drafting process forward.

The City of Pacifica Climate Action Plan Task Force (CAPTF), the consultant and City staff has worked diligently to interpret the State mandated requirements and draft a CAP for the City of Pacifica. A full record of the activities of the Task Force during the drafting process is detalled on the CAP Webpage of

the City of Pacifica Website.
http://www.cityofpacifica.org/government/committees/climate_action_plan_task_force/default.asp).

The draft CAP has been available to the public since July 5, 2012. As of the time of this writing, five (5) comments from members of the public have been received (see attached comments, Exhibit D)

Betty Seto of KEMA will be present at the study session to provide information to supplement the attached power point presentation (see attached, Exhibit A). Carlos Davidson, the Chair of the CAPTF, will also be available to receive comments and answer questions related to the work of the Task Force.

GOAL OF STUDY SESSION:
To receive public input and City Council comments on the Draft CAP in advance of initiating the formal adoption process.

A: DCAP PPT Presentation for August 1, 2012 Study Session
B: Resolution 07-2010
C: Previously Distributed DCAP
http://www.cityofpacifica.org/government/committees/climate_action_plan_task_force/default.asp
D. Submitted public comments as of August 1, 2012

XHIBIT B

RESOLUTION NO. 07-2010

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PACIFICA
AMENDING RESOLUTION NO. 70-2009 CREATING A CLIMATE ACTION PLAN TASK FORCE

WHEREAS, Greenhouse Gas (GHG) Inventories have been prepared for both the community and City government operations and those inventories have been adopted by the City Council; and

WHEREAS, the City needs to develop a Climate Action Plan (CAP) that unitizes the information developed in the Inventories to establish GHG reduction targets and strategies to achieve them for the City of Pacifica; and

WHEREAS, objectives of the task force are to develop and recommend to the City Council a Climate Action Plan that: (1) Establishes targets and dates to achieve reductions in GHG emissions from community and City government activities; (2) Develops strategies that can be implemented that will help reduce emissions to meet those targets; (3) Determines the methods to educate and involve community members in a program to reduce GHG emissions and meet the established targets; and (4) Includes a plan for the use of Federal Energy Efficiency and Conservation Block Grant funds expected to be received by the City in future years; and

WHEREAS, The Climate Action Plan Task Force will be comprised of nine (9) members selected by the Council from the community at large; and

WHEREAS, the committee shall have a chair and a vice-chair, elected by the committee. The committee will automatically sunset on December 31, 2010.

NOW, THEREFORE, IT IS HEREBY RESOLVED that the City Council of the City of Pacifica does hereby authorize the creation of the Climate Action Plan Task Force.

* * *

Passed and adopted at a regular meeting of the City Council of the City of Pacifica on February 8, 2010, by the following vote of the members thereof:

AYES, Councilmembers:	Vreeland, Nihart, DeJarnatt, Digre & Lancelle
NOES, Councilmembers:	None
ABSENT, Councilmembers:	None
ABSTAIN, Councilmembers:	None

Sue Digre, Mayor

ATTEST:

Kathy O'Connell, City Clerk

APPROVED AS TO FORM:

Cecilia M. Quick, City Attorney

DRAFT

EXHIBIT C
FILE COPY

City of Pacifica

Climate Action Plan

July 5, 2012

Prepared in collaboration with the City/County Association of Governments of San Mateo County, and with funding from America Recovery and Reinvestment Act (ARRA) of 2009- Energy Efficiency and Conservation Block Grant (EECBG) and the Bay Area Air Quality Management District

DRAFT

Acknowledgements

Pacifica City Council
Mary Ann Nihart, Mayor
Pete DeJarnatt, Mayor pro Tem
Sue Digre, Councilmember
Len Stone, Councilmember
Jim Vreeland, Councilmember

City Manager
Stephen Rhodes

Pacifica City Staff
Elizabeth Claycomb
Kathryn Farbstein
Christina Horrisberger
Stephen Rhodes
George White
Ann Ritzma

Pacifica Climate Action Plan Task Force
Carlos Davidson, Chair
Celeste Langille, Vice Chair
Gil Anda
Timothy Cowan
Joe Murphy
Michael Northrop
Ray Ramos
David Rosenhelm
Remi Tan

Pacifica Climate Committee
Tim Cowan
Carlos Davidson
Barbara Hubler
Cynthia Kaufman
Mary Keitelman
Celeste Langille
Dinah Verby

Funding for this project provided by the Bay Area Air Quality Management District, federal American Reinvestment and Recovery Act (ARRA) stimulus funding and Pacific Gas and Electric Company.

Prepared with assistance from KEMA, Inc.

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LETTER FROM THE MAYOR

Right now is a critical time for our community, our economy, and our environment. We are fortunate here in Pacifica to be surrounded by a wealth of knowledge and opportunity, venture capital investments, the entrepreneurial spirit, the ability to enjoy and use of our beautiful coastal resources, strong environmental preservation principles, and a drive for innovative creation and natural resources protection. Unfortunately, these resources may be at risk from the effects of climate change, coastal erosion, and water-supply shortages, which in San Mateo County and here in Pacifica may include sea level rise, hotter summers, stronger storms, and increased air pollution.

Climate change is a global problem with local solutions, and we must act as a community to protect the environment. Together, we can conserve energy and find new ways to utilize our scarce resources, thereby saving money and increasing opportunities in the emerging green economy. This plan is a comprehensive approach to sustainability that offers ideas such as:

- Developing programs for residents and businesses to retrofit their buildings with the most energy efficient technology or to install rooftop solar panels;
- Building denser smart growth communities that promote walking, bicycling, and using public transportation over driving and sprawl;
- Minimizing the amount of waste headed for our landfills, which are nearing capacity; and
- Making our city government an example of sustainable operations.

This small but important step is just the beginning of an exciting time of innovation in which the city of Pacifica is taking the lead. We invite you to join the discussion to help us foster a clean environment, healthy community, and prosperous future.

Mary Ann Nihardt

Mayor

DRAFT

1. Introduction

The city of Pacifica is pleased to present the following climate action plan. This plan is designed to be a blueprint of our community's response to the challenges posed by climate change.[1] Climate scientists around the world are unequivocal: humans are changing the Earth's climate through the release of greenhouse gas (GHG) emissions resulting from the combustion of fossil fuels. The longer we delay taking policy action, the more damage we will cause, and the more an effective mitigation policy will cost. It is conceivable and increasingly foreseeable that delay may cause irreversible damage to the biosphere and human society.

Why should Pacifica take action to reduce our emissions, when we are a small city and reducing our emissions alone clearly cannot solve the climate crisis? Local action is vitally important for several reasons. First, California is a leader in efforts to reduce GHG emissions, and those efforts count on and require the support and participation of California's municipalities. Second, key decisions about land use and transportation that affect GHG emissions are made at the local level, and therefore local actions are required to address these emissions. Third, cities across the country are important incubators of GHG reduction strategies— inventing, implementing, and evaluating approaches. We can be a leader in developing GHG reduction strategies that work for small towns like ours.

The steps we take to reduce our emissions, along with actions of our partners in the county, state, and federal government will benefit our community and families. This plan offers ways to make our homes more energy efficient and increase the amount of locally produced renewable energy. It recommends smart development patterns that emphasize vibrant, complete neighborhoods that allow people to go about their business on foot or by bicycles. It provides transit solutions and offers ways to reduce the waste going to our landfills. Finally, this plan outlines measures that will make our municipal government more sustainable.

1.1 Why the City of Pacifica has a Climate Action Plan

The city of Pacifica—with our partner the City and County Association of Governments (C/CAG) of San Mateo County, partial grant funding from the Bay Area Air Quality Management District,

[1] The Climate Action Plan Task Force (CAPTF) was not mandated to provide specific recommendations for climate change adaptation planning. This aspect of climate change planning will be developed by the city independent of this climate action plan. The CAPTF recommends that adaptation planning be incorporated into the General Plan and Local Coastal Plan at the earliest stage possible. Appendix E to this climate action plan provides further adaptation planning information that the CAPTF recommends should be considered regarding outcomes associated specifically with Pacifica.

and Pacific Gas and Electric Company, has developed this climate action plan in order to achieve a number of objectives:

- **To demonstrate environmental leadership**—We as a community can rise to the difficult challenge of reducing the affects of climate change by taking reasonable steps to reduce our GHG emissions.

- **To save money and promote green jobs**—Residents, businesses, and government will pay less for energy through greater energy efficiency. A focus on efficiency creates green job opportunities within the San Francisco Bay Area.

- **To comply with the letter and spirit of state environmental initiatives**—California is taking the lead in tackling climate change and driving the new energy economy. As such, we have a responsibility to help the state meet its goals.

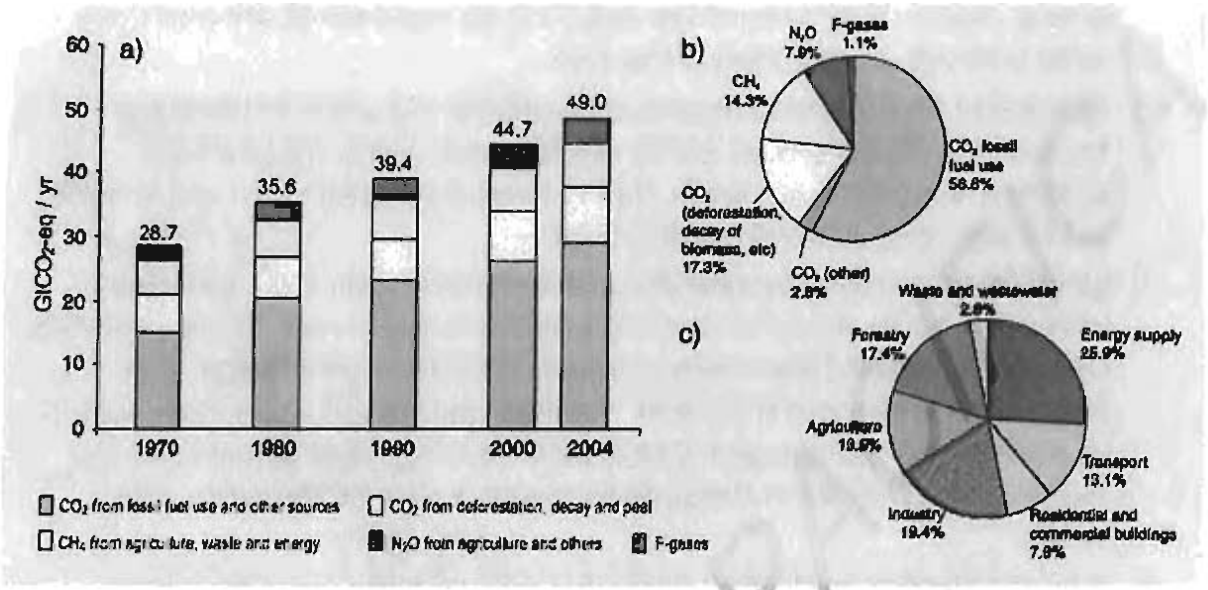
- **To promote sustainable development**—By developing this *qualified* climate action plan, a new class of sustainable development projects, such as mixed-use and transit-oriented developments, can be fast-tracked through California's environmental review process.

1.2 Climate Science

Climate change presents one of the most profound challenges of our time. A broad international consensus exists among atmospheric scientists that the Earth's climate system is being destabilized in response to elevated levels of GHG emissions in the atmosphere, primarily from the combustion of fossil fuels for energy use. GHG emissions comprise carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and three man-made gasses: hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6).

The following graphic from the Intergovernmental Panel on Climate Change, the leading international scientific body for the assessment of climate change, shows the growth and distribution of anthropogenic (human caused) GHG emissions in the atmosphere.

Figure 1. Global Anthropogenic GHG Emissions[2]



Graphic: International Panel on Climate Change, Fourth Assessment Report.

The most important GHG component is CO_2, followed by methane, and then nitrous oxide. CO_2 is emitted through the combustion of fossil fuels, such as coal and petroleum, as well as by the decomposition of clear-cut forest material (deforestation).

A recent comprehensive study of climate impacts in the United States (U.S.), written by a task force of U.S. government scientific agencies and led by the National Oceanic and Atmospheric Administration,[3] states the following key conclusions:

1) **Global warming is unequivocal and primarily human induced (anthropogenic).** The average global temperature has increased over the past 50 years. This observed increase is due primarily to human-induced (anthropogenic) emissions of heat-trapping gases.
2) **Climate changes are underway in the United States and are projected to grow.** Climate-related changes have already been observed in the United States and its coastal waters. These changes include increases in heavy rain downpours, rising

[2] Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: Synthesis Report.* (Adopted section by section at IPCC Plenary XXVII, Valencia, Spain, 12-17 November 2007).

[3] Karl, T. R., J. M. Melillo, and T. C. Peterson (eds.), Global Climate Change Impacts in the United States. For the U.S. Global Change Research Program. (New York: Cambridge University Press, 2009), 12. http://www.globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009

temperatures and sea levels, rapidly retreating glaciers, thawing permafrost, lengthened growing seasons, lengthened ice-free seasons in the ocean and on lakes and rivers, earlier snowmelt, and alterations in river flows.

3) **Widespread climate-related impacts are occurring now and are expected to increase.** Climate changes are already affecting water, energy, transportation, agriculture, ecosystems, and health. These impacts are different from region to region and will grow under projected climate change.

4) **Climate change will stress water resources.** Access to clean water is an issue in every region, but the nature of the potential impacts varies. Drought, related to reduced precipitation, increased evaporation, and increased water loss from plants, is an important issue, especially in the West. Floods and water quality problems are likely to be amplified by climate change in most regions. Declines in mountain snowpack are important in the West and in Alaska, where snowpack provides vital natural water storage.

5) **Crop and livestock production will be increasingly challenged.** Agriculture is considered one of the sectors most adaptable to changes in climate. However, increased heat, pests, water stress, diseases, and weather extremes will pose adaptation challenges for crop and livestock production.

6) **Coastal areas are at increasing risk from sea-level rise and storm surge.** Sea-level rise and storm surges place many U.S. coastal areas at an increasing risk of erosion and flooding, especially along the Atlantic and Gulf Coasts, Pacific Islands, and parts of Alaska. Energy, transportation infrastructure, and other property in coastal areas are very likely to be adversely affected.

7) **Threats to human health will increase.** Health impacts resulting from climate change are related to heat stress, waterborne diseases, poor air quality, extreme weather events, and diseases transmitted by insects and rodents. A robust public health infrastructure can reduce the potential for negative impacts.

8) **Climate change will interact with many social and environmental stresses.** Climate change will combine with pollution, population growth, overuse of resources, urbanization, and other social, economic, and environmental stresses to cumulatively create larger impacts than from any of these factors alone.

9) **Thresholds will be crossed, leading to large changes in climate and ecosystems.** There are a variety of thresholds in the climate system and ecosystems. These thresholds determine, for example, the presence of sea ice and permafrost and the survival of species, from fish to insect pests, with implications for society.

10) **Future climate change and its impacts depend on choices made today.** The amount and rate of future climate change depend primarily on current and future human-caused emissions of heat-trapping gases and airborne particles. Responses involve

reducing emissions to limit future warming and adapting to the changes that are unavoidable.

According to the current scientific consensus, we must limit global temperature increases to less than 2° Celsius (C) to minimize the chances of catastrophic changes in the climate system. Currently, the global atmospheric GHG concentration stands at 392.39 parts per million[2] (ppm) increasing approximately 3 ppm per year, as of 2011. To limit the average global temperature increase to 2° C, GHG concentrations need to be stabilized at a level well below 450 ppm. To achieve this concentration level, global GHG emissions must be reduced to at least 50 percent below their 1990 levels by 2050. This target is especially challenging given the likelihood that emissions will rise in the developing world to address basic human needs and the failure of the United States, to date, to make serious national emission reduction commitments.

Additional Resources

More information is available for those interested in the state of the science of climate change. Here are some suggestions.

- International Panel of Climate Change Fourth Assessment Report http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml
- U.S. Global Change Research Program http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts
- Pew Center on Climate Change http://www.pewclimate.org/
- National Ocean and Aeronautical Administration (NOAA) http://www.climate.gov/#climateWatch
- U.S. Environmental Protection Agency http://www.epa.gov/climatechange/indicators.html
- Our Changing Climate: A report on global warming and California produced by the California Climate Change Center in collaboration with the Union of Concerned Scientists http://www.climatechoices.org/ca/
- State of California's Resource for Global Climate Change Information http://www.climatechange.ca.gov

1.3 State Policy and Regulatory Context

The state of California has been a leader in developing and implementing policies and regulations that directly address the risk of severe climate change.

[2] Data from CO2Now.org for July 2011. http://co2now.org

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, the California legislature passed Assembly Bill (AB) 32, which sets the goal to reduce GHG emissions to 1990 levels by 2020. AB 32 finds and declares that "global warming poses a serious threat to economic well-being, public health, natural resources and the environment of California."[4] This legislation granted authority to the California Air Resources Board to establish regulatory, reporting, voluntary, and market mechanisms to achieve quantifiable reductions in GHG emissions to meet the statewide goal.

Executive Order S-3-05

In 2005, California's Governor Arnold Schwarzenegger issued Executive Order S-3-05 that calls on the state to reduce GHGs to 80 percent below 1990 levels by 2050. The Executive Order also created a Climate Action Team to help implement the directive.

Assembly Bill 1493, the Pavley Bill

In 2002, the California legislature enacted Assembly Bill 1493 (also called the Pavley Bill), which directs the California Air Resources Board to adopt standards that will achieve "the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles, taking into account environmental, social, technological, and economic factors." In September 2009, the Air Resources Board adopted amendments to the Pavley's regulations to reduce GHG emissions in new passenger vehicles from 2009 through 2016.

Senate Bill 375

In September 2008, Senate Bill (SB) 375 was signed into law, providing emissions-reduction goals related to vehicle miles traveled for regional planning purposes. The bill seeks to align regional transportation planning efforts with regional GHG reduction targets, land-use, and housing allocations. SB 375 requires metropolitan planning organizations to adopt a Sustainable Communities Strategy or alternative planning strategy. The California Air Resources Board, in consultation with the metropolitan planning organizations, has set a per capita reduction target for GHGs emitted by passenger cars and light trucks in the San Francisco Bay Area at 7 percent below 2005 levels for 2020 and at 15 percent below 2005 levels for 2035.

Senate Bill 97, CEQA Guidelines for Addressing GHG Emissions

In February 2010, the California Office of Administrative Law approved recommended amendments to the California Environmental Quality Act's (CEQA) Guidelines that address

[4] California Health and Safety Code, Division 25.5. California Global Warming Solutions Act Of 2006 (passed under Assembly Bill 32) (filed Sept. 27, 2006).

GHG emissions. These amendments were developed to provide guidance to public agencies for their draft CEQA documents regarding analysis and mitigation of GHG emissions and the effects of GHG emissions. CEQA requires public agencies to review the environmental impacts of proposed projects, including general plans, specific plans as well as specific kinds of development projects.

California 33 Percent Renewable Portfolio Standard (RPS)

Established in 2002 under Senate Bill 1078, California's Renewables Portfolio Standard (RPS) was accelerated in 2006 under Senate Bill 107, which required that 20 percent of electricity retail sales be served by renewable energy resources by 2010. Subsequent recommendations urged a goal of 33 percent by 2020, and on November 17, 2008, Governor Schwarzenegger signed Executive Order S-14-08 requiring that "[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed the California Air Resources Board, under its Assembly Bill 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In April 2011, Governor Edmund G. Brown signed Senate Bill X1-2 in order to codify the *33 percent by 2020* goal. This new RPS preempts the California Air Resources Board's 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new RPS goals of 20 percent of retails sales from renewables by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020.[5]

Bay Area Air Quality Management District CEQA guidelines

The Bay Area Air Quality Management District encourages local governments to adopt *qualified* GHG reduction strategies that are consistent with the goals of AB 32. ICLEI community emissions protocol Its *Qualified GHG Reduction Strategy* may streamline environmental review of community development projects. According to the Bay Area Air Quality Management District, if a project is consistent with a its *Qualified GHG Reduction Strategy*, then it can be presumed that the project will not have significant GHG impacts. This approach is consistent with the state's following CEQA Guidelines, section 15183.5:

> Lead agencies may analyze and mitigate the significant impacts of greenhouse gas emissions at a programmatic level, such as... a plan to reduce greenhouse gas emissions. Later project-specific environmental documents may tier from and/or

[5] Excerpt from the California Energy Commission's website. http://www.energy.ca.gov/portfolio/index.html

incorporate by reference that existing programmatic review. Project-specific environmental documents may rely on an EIR [environmental impact report] containing a programmatic analysis of greenhouse gas emissions.

This climate action plan provides a foundation for future development efforts in the community of Pacifica. It is expected that future environmental documents will identify and incorporate specific, applicable measures from this climate action plan for projects undergoing CEQA review.

1.4 Regional Efforts

The following regional efforts to promote GHG reductions are already under way.

City/County Association of Governments of San Mateo County (C/CAG). The C/CAG is a council of governments consisting of the county of San Mateo and all 20 cities located within the county. The organization deals with issues that affect quality of life in general: transportation, air quality, storm-water runoff, hazardous waste, solid waste and recycling, land-use near airports, and abandoned vehicle abatement. The C/CAG supports a number of sustainability initiatives including the following:

- ***San Mateo County Energy Watch (http://www.smcenergywatch.com/).*** This program is a local government partnership between Pacific Gas and Electric Company (PG&E) and C/CAG to promote energy efficiency. The program is managed and staffed by RecycleWorks, a program delivered by the county of San Mateo.

- ***Congestion Management Agency.*** C/CAG serves as San Mateo County's Congestion Management Agency, which identifies strategies on how to respond to future transportation needs, to develop procedures to alleviate and control congestion, and to promote county-wide solutions.

- ***Sustainable Communities Strategy/Regional Transportation Plan.*** C/CAG is collaborating with local governments in San Mateo County as well as regional agencies to develop a sustainable communities strategy, in compliance with the requirements of SB 375. The sustainable communities strategy will facilitate focused development in priority development areas near public transit stations. The aim of San Mateo County's strategy is to better integrate land-use with public transportation access in order to reduce GHG emissions.

- ***Energy Upgrade California, County of San Mateo.*** A partnership among California counties, cities, non-profit organizations, and the state's investor-owned utilities (for

example, PG&E), the program helps residential and commercial consumers become knowledgeable about energy and water efficiency programs.

Sustainable San Mateo County (SSMC). SSMC was established in 1992 by a group of San Mateo County residents that sought to create a broader awareness of the concept of sustainability. SSMC supports multiple programs to promote energy efficiency and alternative transportation and to provide education on sustainability concepts.

Joint Venture: Silicon Valley. Established in 1993, Joint Venture Silicon Valley provides analysis and action on issues affecting the region's local economy and quality of life. The organization brings together established and emerging leaders—from business, government, academia, labor, and the broader community— to spotlight issues and work toward innovative solutions. Joint Venture is dedicated to promoting climate-friendly activities that help the local economy and improve the quality of life in Silicon Valley.[6]

Silicon Valley Leadership Group (SVLG) Bay Area Climate Change Compact. SVLG is an organization consisting of principal officers and senior managers of its member companies that works cooperatively with local, regional, state, and federal government officials to address major public policy issues affecting the economic health and quality of life in Silicon Valley. In 2009, SVLG organized the Bay Area Climate Change Compact, which establishes a framework for regional cooperation and sets aggressive goals to reduce GHG emissions.

Sustainable Silicon Valley (SSV). In 2004, SSV developed a voluntary initiative that set a target to reduce CO_2 emissions to 20 percent below the region's 1990 levels by 2010. SSV's partners participating in the voluntary CO_2 emissions reduction program could determine their own baseline year and CO_2 percentage reduction goal to reach by 2010. Each pledging partner also chose how it would meet its target. Options abounded—participants could choose from improvements in equipment efficiency to energy conservation, offsetting CO_2 emissions by using renewable energy sources, and purchasing green power and/or promoting alternative commute options.

1.5 Local Efforts

While cities may be vulnerable to climate impacts, they also can play a active role in reducing the emissions that exacerbate climate impacts. Cities have the ability, and potential, to use resources, such as energy, materials, and land, more efficiently due to their higher

[6] From Joint Venture Silicon Valley website. http://www.jointventure.org/

concentrations of people and activities than in less urban areas. They are places where high-level, knowledge-based activities congregate with the expertise to tackle climate change. This is especially true in the Bay Area.

AB 32 identifies local governments as essential partners in achieving California's goal to reduce GHG emissions. Local governments have the primary authority to plan, zone, and permit how and where land is developed to accommodate population growth and the changing needs of their jurisdictions. They have varying degrees of responsibility for collecting and processing waste and have responsibility for other civic environmental infrastructures that use energy and water. They own and manage their buildings and vehicle fleets. They are able to form partnerships with private interests as well as to mobilize and coordinate community action. Local governments are well positioned to promote economic development that emphasizes sustainable development and local green jobs.

The city of Pacifica has carried out many projects to reduce its energy consumption and increase its sustainability. The city built an innovative wastewater treatment plant that has reduced water and energy use. More recently, the city installed large solar panel arrays on both the City Council's chambers and the wastewater treatment plant. The city is affiliated with several programs, such as Sustainable Silicon Valley, the U.S. Mayor's Climate Protection Agreement, the Climate Registry, Energy Upgrade California, and San Mateo County's Green Business Program, that provide information and tools to residents that strengthen general awareness about GHG emissions and their impacts and to help Pacifica reduce its local GHG emissions. Pacifica has also developed policies to assist with waste reduction, such as limiting the use of polystyrene and providing battery and medical waste disposal locations to the public.

In addition, Pacifica's City Council has appointed community groups to develop policies aimed toward making Pacifica more sustainable. Specifically, the Green Building Task Force, formed in 2008, develops green building policies for construction and development projects that take place within Pacifica. In 2010, the city adopted a green building ordinance, which became effective July 5, 2011, that requires construction and development projects to utilize green measures that minimize resource consumption, promote waste reduction, and encourage use of less-toxic building materials. The ordinance will be periodically reviewed and updated by the Green Building Task Force's members and staff.

The Climate Action Plan Task Force was formed to develop a climate action plan that outlines ways Pacifica can reduce its local GHG emissions. Moreover, the city's Open Space Committee reviews and provides input to the City Council on activities related to open space and hillside areas. Lastly, the Planning Commission and City Council, in their regular decision-making processes, take measures to ensure that land-use decisions result in actions and in projects that minimize adverse affects to the environment and promote sustainability.

The city of Pacifica is currently updating its *General Plan*. The updated *General Plan* will integrate the goals and measures of this climate action plan into the *General Plan's* guidance and will help achieve the climate action plan's targets and milestones by providing the necessary policy platform from which to initiate new development and redevelopment in the community.

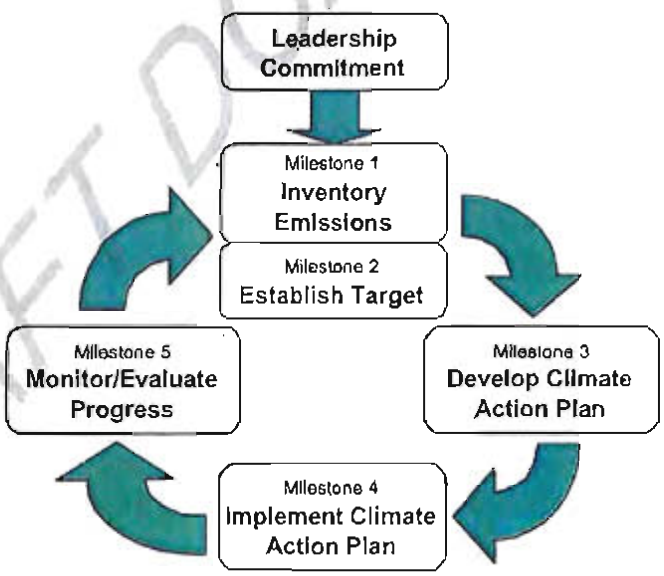
1.6 City of Pacifica's Climate Action Plan Process

This climate action plan was developed in partnership with the C/CAG. The climate action plan template project is intended to assist member jurisdictions and other interested local governments in developing consistent with the California Environmental Quality Act's guidelines. By combining resources, the climate action plan template project promotes high-quality climate action plans that can be used to meet regulatory requirements and support planning efforts to reduce GHG emissions. The template project and Pacifica's climate strategy is based on the International Council for Local Government Initiatives (ICLEI) 5-Milestone process as shown in the following section.

1.6.1 Framework for Climate Action

The ICLEI 5-Milestone process is a management process based on increasing knowledge in each step to achieve an organization's targeted GHG-emissions reductions.

Figure 2. Iterative Management Processes for Climate Action[7]



[7] ICLEI – Local Governments for Sustainability. City of Pacifica 2005 Government Operations Greenhouse Gas Emissions Inventory.

- **Leadership Commitment.** Define the overall vision and goals for the community.
- **Milestone 1 (Inventory Emissions).** Conduct a baseline emissions inventory and forecast.
- **Milestone 2 (Establish Target).** Adopt an emissions-reduction target for the forecast year.
- **Milestone 3 (Develop Climate Action Plan).** Identify feasible, suitable strategies and supporting actions to reduce emissions and achieve co-benefits aligned with the overall vision and goals.
- **Milestone 4 (Implement Climate Action Plan).** Enact the plan.
- **Milestone 5 (Monitoring/Evaluate Progress).** Establish feedback loops to assess and improve performance, including conducting an assessment and an adjustment of the necessary human, financial, and data resources.

In November 2009, the city of Pacifica completed a municipal GHG emissions inventory that was funded by C/CAG as part of a joint effort with ICLEI, Joint Venture Silicon Valley, and the county of San Mateo., The Pacifica Climate Committee, a citizens group working on climate change, produced a community-wide inventory for Pacifica following the completion of the municipal inventory.

Pacifica's climate action plan fulfills milestones 2 and 3 of the ICLEI's framework. By implementing the actions identified in this climate action plan, the city will complete milestones 4 and 5. Additionally, to support milestone 5, the C/CAG is developing forecasting and calculation tools to allow its member jurisdictions to track total community GHG emissions. The tool will assist Pacifica to monitor the effectiveness of its emissions-reduction efforts.

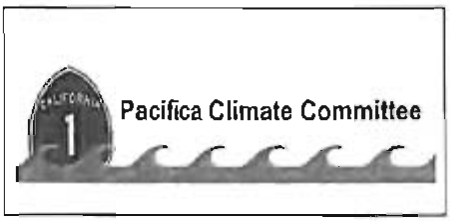
1.6.2 Public Outreach and Community Engagement

The city of Pacifica chose to establish a Climate Action Plan Task Force to develop and recommend a climate action plan to the City Council. The City Council passed a resolution in late 2009 identifying nine Pacifica citizens representatives to serve on the task force. The task force held monthly meetings that were open to the public.

The task force has focused on drafting objective recommendations to the City Council and has worked with local agencies not under the jurisdiction of the city of Pacifica, including both school

districts, the North Coast County Water District, and the city's franchise solid-waste collection provider. Task force members continually and consistently sought input from members of the public to ensure that the recommendations made to the City Council are consistent with the public's understanding of and ability to reduce GHG emissions locally and beyond Pacifica's borders.

2. Baseline Greenhouse Gas Inventory



This chapter provided courtesy of the Pacifica Climate Committee. Original document titled "A Community-wide Greenhouse Gas Inventory for Pacifica, California for 2005." Updated June 2011.

2.1 Background

The Pacifica Climate Committee is a citizens group in Pacifica, California working to address climate change issues in our community. In 2008, the committee successfully urged the City Council and Mayor to sign the U.S. Mayors Climate Protection Agreement.[8] The Climate Committee then began working in conjunction with City Government on a community-wide greenhouse gas (GHG) emissions inventory to complement the City's inventory for government operations. The community-wide inventory can help guide Pacifica's efforts to reduce emissions from the community as a whole. A community-wide focus is necessary for emissions reductions efforts because City operations account for less than four percent of total Pacifica emissions. Greenhouse gas inventories indicate the major sources of emissions and their relative size, and therefore help identify opportunities for emissions reductions.

We have updated our original Pacifica inventory to bring it into compliance with new guidance from the Bay Area Air Quality Management District issued since our inventory was first produced in 2009.[9] The changes are relatively minor and do not affect any of our conclusions. We have added estimates of emissions from off-road equipment, and from Direct Access purchases of electricity and natural gas. Emissions from transportation are now calculated based on vehicle miles traveled, rather than on fuel sales. Finally, we have taken community air travel out of the inventory tables and charts to make the results more comparable with other cities which typically do not include air travel, however we still include air travel in the discussion of Pacifica emissions.

Community- Wide Inventory by Pacifica Climate Committee – June 2011

[8] U.S. Conference of Mayors, Climate Protection Agreement.
URL: http://www.usmayors.org/climateprotection/agreement.htm

[9] Bay Area Air Quality Management. 2010. GHG Plan Level Quantification Guidance, April 15 2010.

2.2 Methods

A greenhouse gas inventory is an accounting of emissions sources that can be tracked over time to help an entity achieve its emissions reduction goals. An inventory thus covers fewer emissions sources than a "carbon footprint" analysis, which aims to include all sources of emissions. For example, the current inventory does not include emissions associated with all the goods purchased by Pacificans, the food we eat, nor does it include the life-cycle emissions associated with electricity generation.

The World Business Council for Sustainable Development and the World Resources Institute define three 'scopes' of reporting for greenhouse gas inventories. The first scope covers direct sources of GHG emissions that are owned or controlled by an entity, including the release of refrigerants and natural gas used in residences and City buildings. The second scope covers imported sources of energy, such as electricity. The third scope refers to transportation and solid waste. This inventory covers all three scopes for the year 2005. We chose the year 2005 to match the City operations inventory conducted by the City. Due to lack of available data we were not able to calculate a 1990 base-year inventory.

To complete the Inventory we used the Clean Air and Climate Protection greenhouse gas inventory calculator version 1.1 developed by the International Council for Local Environmental Initiatives (ICLEI). For air travel and solid waste calculations we also made use of a second inventory calculator developed by the organization Clean Air Cool Planet.[10]

Our inventory calculations include emissions of three greenhouse gases: carbon dioxide, methane and nitrous oxide. Rather than reporting emissions of each gas separately, greenhouse gas inventories typically report emissions in metric tonnes of carbon dioxide equivalents (tonnes CO_2e) in which the amount of methane and nitrous oxide are converted to carbon dioxide equivalents based on how much they contribute to climate warming. Following State of California and international convention our inventory reporting is in metric tonnes. One metric tonne is 1000 kilograms or 2,205 pounds.

Community Wide Inventory by Pacifica Climate Committee – June 2011

[10] Clean Air - Cool Planet, Clean Air - Cool Planet Campus Carbon Calculator. 2008. URL: http://www.cleanair-coolplanet.org/toolkit/inv-calculator.php

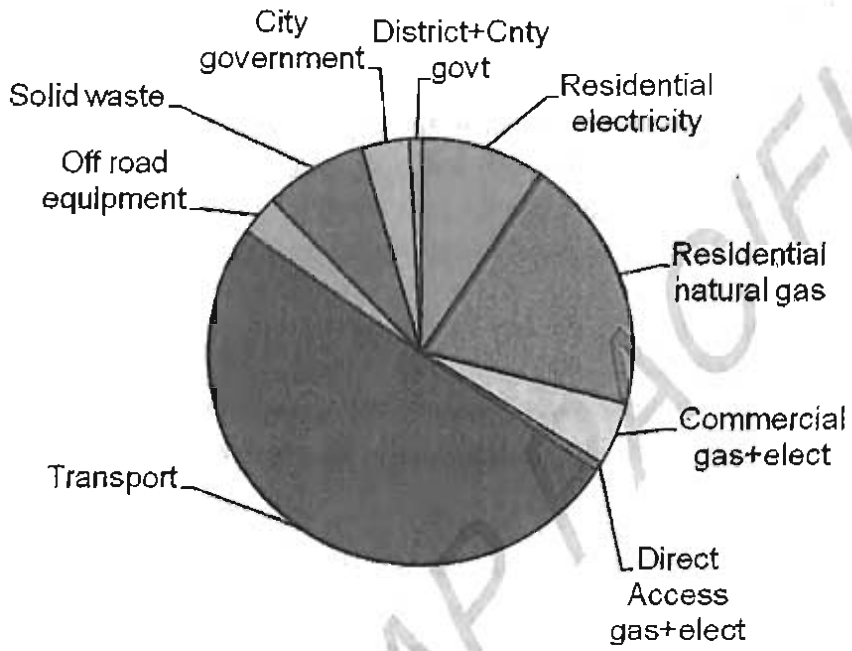
2.3 Inventory Results

Pacifica Community-wide Greenhouse Gas Emissions 2005

Source	Metric Tonnes CO2e	Share
Transport	92,033	50.3%
Off road equipment	5,461	3.0%
Solid waste	14,267	7.8%
Residential electricity	17,120	9.4%
Residential natural gas	35,859	19.6%
Commercial electricity	4,507	2.5%
Commercial natural gas	4,267	2.3%
Direct Access electricity	491	0.3%
Direct Access natural gas	629	0.3%
City government operations	6,594	3.6%
County+District Gov't Gas+Elect	1,861	1.0%
Total	183,090*	

* Independent source categories do not add up to the total 183,090 MTCO2e due to rounding.

Community Wide Inventory by Pacifica Climate Committee – June 2011



Activity Levels for Pacifica Community-wide GHG Inventory 2005

Source	activity level
Transport vehicle miles traveled	188,500,542
Solid waste (short tons)	15,784
Residential electricity kWh	76,532,423
Residential natural gas therms	6,740,995
Commercial electricity	20,147,118
Commercial natural gas	802,038
Direct Access electricity	1,125,794
Direct Access natural gas	118,167
County govt. electricity	120,024
County govt. natural gas	3,032
Special district electricity	4,048,866
Special district natural gas	171,520

2.4 Key Findings

Including City government operations, Pacifica's community-wide greenhouse gas emissions in 2005 were 183,090 metric tonnes of carbon dioxide equivalents. City government operations accounted for 3.6 percent of total emissions. Reducing greenhouse emissions from Pacifica will therefore require the City government and the community to work together to reduce emissions from City operations, and more importantly, from the community as a whole.

The single largest source of emissions was transportation, at 92,033 tonnes CO_2e, accounting for 50.3 percent of total emissions. This highlights that significant emissions reductions will require addressing transportation – both encouraging use of public transit and ride sharing, and encouraging use of high fuel efficiency and alternate fuel vehicles.

We did not formally include air travel by Pacificans in the inventory, but if we had it would have been the second largest source of emissions, at 58,830 tonnes CO_2e. If air travel was in the inventory it would have accounted for 24 percent of total emissions. Most community level inventories do not include air travel, in part because it is not clear how City government can effect changes in air travel. The Pacifica Climate Committee felt it was important to calculate and discuss emissions from air travel because it is a large share of total emissions. Our hope is that discussing air travel will help educate the public and encourage Pacificans to fly less.

Residential natural gas use accounted for 19.6 percent of total emissions, and residential electricity was 9.4 percent of total emissions (35,859 and 17,120 tonnes CO2e respectively). From 2003 to 2007, Pacifica residential electricity use grew 7.7 percent and natural gas use increased 1.9 percent, while Pacifica's population was roughly unchanged. Reducing residential energy use will require programs such as encouraging and incentivizing home energy audits for existing buildings, help with financing for home insulation, and solar water thermal, or photovoltaic systems. The City has already taken an important step with the development of a new green building ordinance for new buildings and remodels. Pacifica City government can play a leadership role by setting high energy and environmental standards for all new City buildings and retrofits.

Solid waste generated 14,267 tonnes CO_2e, accounting for 7.8 percent of total emissions. In landfills food and other organic waste generate methane, a potent greenhouse gas. Pacifica has the opportunity to easily reduce emissions from solid waste. The best approach is to prevent organic material from going to the landfill. Hopefully, Pacifica's new curbside pickup of compostables will result in a large share of organic waste being diverted from the landfill.

Commercial natural gas and electricity use together accounted for 4.8 percent of total emissions. Commercial gas and electric is a relatively small share of total emissions so it is not a potential source of large emissions reductions. However commercial businesses commitment to energy use reductions can in some cases be a model for patrons and therefore can contribute to overall community commitment to reduce emissions.

2.5 Goals

The City of Pacifica signed on to the U.S. Conference of Mayors Climate Protection Agreement,[11] which committed the City to "strive to meet or beat the Kyoto Protocol targets." The Kyoto Protocol targets call for seven percent emissions reductions from 1990 levels by 2012. Due to lack of data we have not been able to calculate 1990 baseline emissions for Pacifica. However, if we assume that Pacifica's emissions have increased since 1990 at the same rate as for the state of California as a whole, then Pacifica's emission levels in 2005 would be approximately 15 percent above 1990 levels. Thus, Kyoto Protocol goals imply a 22 percent reduction below 2005 levels by 2012. The state of California has set a greenhouse gas emissions reduction target of returning to 1990 emissions levels by the year 2020 (equivalent to a 15% reduction from 2005 levels), and 80% below 1990 levels by 2050.[12] The Intergovernmental Panel on Climate Change in its 2007 assessment concluded that globally we need emissions reductions between 25-40 percent below 1990 levels by 2020 in order to reduce the risk of catastrophic climatic changes. We believe Pacifica should take a leadership role and commit to reducing total community-wide emissions by 40 percent below 2005 levels by 2020, and 80% below 1990 levels by 2050. To be a leader we must aim to do more than simply meet the State of California goals of 15% reduction from 2005 levels by 2020.

2.6 Details of Findings, Methods, and Data Sources

2.6.1 Residential Natural Gas and Electricity Use

Pacific Gas and Electric Company (PG&E) provided us with total meter readings for residential electricity and natural gas use for the years 2003-2007. For 2005, total residential electricity use was 76. 5 million kWh and total natural gas use was 6.7 million therms. When natural gas is

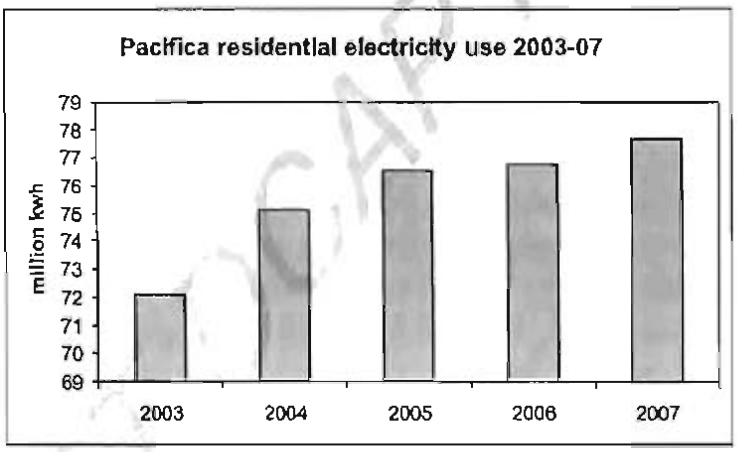
[11] U.S. Conference of Mayors, Climate Protection Agreement.
URL: http://www.usmayors.org/climateprotection/agreement.htm.

[12] Schwarzenegger, Arnold. Governor. :Executive Order # S-03-05," June 1, 2005, establishing greenhouse gas emission reduction targets. 2005.

burned in residential stoves, furnaces, clothes dryers and other appliances it releases greenhouses gases. Electricity use in residences does not result in GHG emissions at the site.

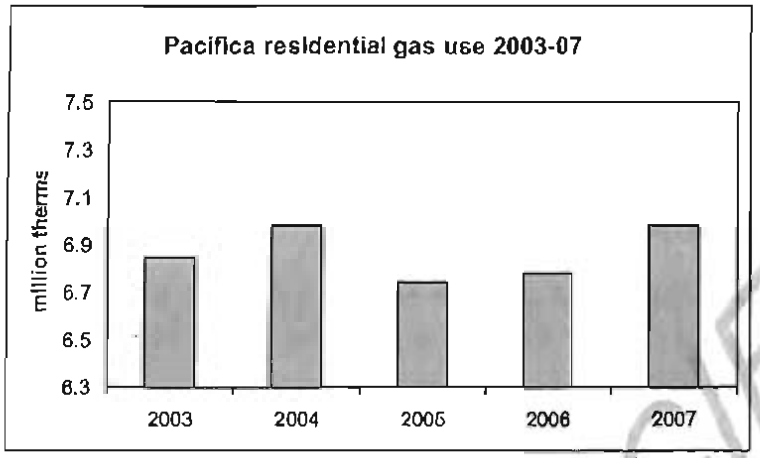
Greenhouse gas emissions from electricity result from electricity generation and are determined by how the electricity is generated (e.g., coal or wind power). For our inventory calculations we used electricity and natural gas emissions factors from the California Air Resources Board's Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories.[13]

While Pacifica's population was little changed from 2003 to 2007, residential electricity use increased 7.7 percent. This is a disturbing trend. We would have hoped that with the recent increase in public awareness of the need for energy conservation, and the now easy availability of compact florescent light bulbs and energy efficient appliances that residential energy use per capita would be declining. Instead Pacificans are using more and more electricity each year in their homes.



Community Wide Inventory by Pacifica Climate Committee – June 2011

[13] California Air Resources Board. 2010. Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories, Version 1.1, May. 2010.



2.6.2 Transportation

Estimating GHG emissions from vehicles was the most challenging part of the inventory. Ideally we would want to know how far Pacificans drive and what type of vehicles they use, but this information is not available. Instead we used data on vehicle miles traveled within the geographic boundaries of Pacifica, provided to us by ICLEI from their analysis of data from the Metropolitan Transportation Commission. There were a total of 188 million vehicle miles traveled in Pacifica in 2005. Vehicle miles were converted into GHG emissions based on county wide data on the mix of diesel and gasoline vehicles, and fuel efficiency - see Appendix F for details.

A downside of our estimation method is that it does not allow us to track changes in Pacificans' commuting behavior as the method only counts travel within Pacifica. In the future it would be helpful to explore use of trips based approach that could be tracked over time to measure progress in reducing emissions.

2.6.3 Air Travel

We estimated Pacifica air travel emissions based on Pacifica's share of U.S. population and total passenger air travel miles in the U.S. in 2005. In 2005 Pacifica's population according to the Census Bureau[14] was 37,010, and the U.S. population was 285,107,923,[15] so Pacifica's

[14] U.S. Census Bureau, Population Division. 2008. Table 4: Annual Estimates of the Population for Incorporated Places in California, Listed Alphabetically: April 1, 2000 to July 1, 2007 (SUB-EST2007-04-06). Accessed July 10, 2008 URL:http://quickfacts.census.gov/qfd/states/06/0654806lk.html.

[15] U.S. Census Bureau, Population Division. 2008. Table 1: Annual Estimates of the Population for the United States and States, and for Puerto Rico: April 1, 2000 to July 1, 2005 (NST-EST2005-01). URL: http://quickfacts.census.gov/qfd/states/06/0654806lk.html.

share of national population was 0.013 percent. There were a total of 583,689,304,000 passenger miles flown in 2005.[16] Pacifica's share of the national total is 75,768,996 passenger air miles. Passenger air miles for Pacifica were entered into the Clean Air Cool Planet calculator to determine total emissions from air travel.

This is likely an underestimate of Pacificans' air travel and associated greenhouse gas emissions. First, Pacificans have easy access to a major airport making air travel more convenient than for most Americans, and Pacifica's average income is much higher than the national average so we can afford more air travel. In 1999 median family income in Pacifica was $78,361 a year, while the U.S. median was $50,046.[17]

Scientists have noted that greenhouse gases emitted at higher altitudes from airplanes have a greater warming effect than would the same emissions at ground level. The extent of this effect is still unclear. It is estimated that emissions from airplanes have between two and four times the warming effect of ground level emissions. Accordingly, the Clean Air Cool Planet calculator we used includes a 2.8 multiplier for estimating emissions from air travel.

2.6.4 Solid Waste

In 2005 Pacifica sent 15,784 tons of solid waste to the landfill at Ox Mountain, Half Moon Bay.[18] The ICLEI carbon calculator required breakdowns on the percentage of waste by category (food, paper, etc.) which was not available from Coastside Scavenger[19]. We therefore calculated emissions from solid waste using the Clean Air – Cool Planet calculator which does not require waste category data (and therefore implicitly assumes some average waste composition). The Clean Air – Cool Planet calculator estimates 15,784 tons of solid waste in a landfill without methane capture would produce 14,267 metric tonnes CO_2e emissions.

Community Wide Inventory by Pacifica Climate Committee – June 2011

[16] U.S. Bureau of Transportation Statistics. 2008. Table 1-37: U.S. Passenger-Miles. URL: http://www.bts.gov/publications/national_transportation_statistics/html/table_01_37.html

[17] U.S. Census Bureau, Population Division. 2009. Profile of Selected Economic Characteristics: Census 2000 Summary File 3 (SF 3) - Sample Data, for Pacifica and U.S. URL: http://quickfacts.census.gov/qfd/states/06/0654806.html.

[18] Porter, Chris. Coastside Scavenger ; Now Recology of the Coast. email to Celeste Langille, 2008. January 21.

[19] The City of Pacifica's solid waste contract is currently with Recology of the Coast

2.6.5 Commercial Natural Gas and Electricity Use

Pacific Gas and Electric Company provided us with total meter readings for commercial electricity and natural gas use for the years 2003-2007. For 2005 total commercial electricity use was 20.1 million kWh and total natural gas use was 802,038 therms. Emissions were calculated using the methods described in the residential natural gas and electricity section above. Like residential electricity use, commercial electricity use increased 8.5 percent from 2003 to 2007. Commercial natural gas used increased 8.8 percent over the same time period. We did not have the necessary information to allow us to determine if increased commercial energy use was due to an expansion of commercial business activity, or increased energy intensity (greater energy use for a given level of activity). PG&E reported no private industrial energy use in Pacifica in 2005.

2.6.6 Direct Access Purchases of Gas and Electricity

Most non-residential users get their natural gas and electricity from PG&E; however some, mostly large industrial users, have Direct Access agreements between the user and a provider. Although PG&E distributes and measures Direct Access energy, when there are few purchasers the identity of the purchaser and the quantity are suppressed from the public information provided by PG&E. In the data we received from PG&E the quantities of Direct Access electricity and natural gas use were suppressed. We estimated Direct Access energy use for Pacifica based on county wide average ratios of Direct Access to non-Direct Access energy use, and the Pacifica ratio of manufacturing to total employment compared to the county. See Appendix F for details.

2.6.7 County and Special Districts Natural Gas and Electricity

Pacific Gas and Electric Company provided us with total meter readings for electricity and natural gas use for the years 2003-2007 for county government and special districts in Pacifica. Special districts include the two school districts and the North Coast County Water District. For 2005 total electricity use by county government was 120,024 kWh and total natural gas use was 3,032 therms. For 2005 total electricity use by special districts in Pacifica was 4,048,866 kWh and total natural gas use was 171,520 therms. Emissions were calculated using the methods described in the residential natural gas and electricity section above.

2.6.8 Off-road Equipment

Emissions from mobile off-road sources in Pacifica were estimated based on shares of countywide emissions from lawn and garden equipment and from Construction, Industrial, and Light Commercial Equipment, following the methods in the San Mateo County Community-scale GHG Inventory template produced by ICLEI and the City and County Association of Governments of San Mateo County.[20] Pacifica's share of county-wide lawn and garden equipment emissions was estimated based on Pacifica's share of households in the county. Pacifica's share of Construction, Industrial, and Light Commercial Equipment emissions was based on Pacifica's share of employment in the county. See Appendix F for details.

2.7 Conclusions

The next step is for Pacifica to develop a Climate Action Plan stating its emissions reductions targets and actions to achieve those targets. This inventory identifies the major sources of GHG emissions and can be used to estimate the possible emissions reductions achievable by specific actions. Developing an action plan requires identifying a set of actions that together can meet Pacifica's emissions reduction targets.

Reducing greenhouse gas emissions is an enormous challenge. Pacifica has already made the commitment to reduce greenhouse gas emissions by signing on to the U.S. Mayors Climate Protection Agreement, and by completing this inventory as well as an inventory for City operations. And the City has already begun to reduce emissions from City operations by installing solar panels on the wastewater treatment plant and at City Council Chambers/Sharp Park Pump Station. With a concerted effort from the entire community, Pacifica can reach its goals of significantly reducing its GHG emissions. A number of analyses indicate that in the long run there are very little net-costs to taking the actions required to reduce emissions.[21] Actions to reduce emissions can have tremendous economic benefits by reducing energy costs, and can improve public health by reducing emissions of particulates and other pollutants that are co-emitted along with greenhouse gases.

Community Wide Inventory by Pacifica Climate Committee – June 2011

[20] Local Governments for Sustainability (ICLEI) and City and County Association of Governments of San Mateo. 2010. Community-scale Greenhouse Gas Emissions Inventory Template for San Mateo County.

[21] McKinsey & Company, 2009. Pathways to a low-carbon economy. Available at www.mckinsey.com

Acknowledgements

This community-wide greenhouse has inventory was researched and written by Carlos Davidson and the Pacifica Climate Committee. The inventory was a large undertaking and would not have been possible without the support of many people. We wish to thank the Pacifica City Council for signing the Mayor's Climate Protection Agreement and City Manager Steve Rhodes for his strong support for the inventory process, and help obtaining PG&E and solid waste data. Betty Seto and KEMA reviewed our earlier inventory and provided helpful comments on revisions. Elizabeth Claycomb of the City of Pacifica Planning Department helped with the update process and provided us with the ICLEI- C/CAG Inventory template. Xico Manarolla of ICLEI arranged access to their carbon calculator software. David Ory, Harold Brazil and Benjamin Espinosa of the Metropolitan Transportation Commission answered questions about vehicle miles traveled data. Amruda Sulkhalkar of ICLEI was invaluable in sharing transport data. Caitlin Steele of San Francisco State University, and Charlotte Ely of the U.S. Environmental Protection Agency provided helpful information on emissions from solid waste. Chris Porter of Coastside Scavenger provided solid waste data. Barbara Hubler and Mary Keitelman did editorial and layout work

3. Emissions Forecast and Reduction Targets

The city of Pacifica forecast future emissions for the year 2020, based on the 2005 community and municipal operations emissions inventories. The emission forecast represents a *business-as-usual* prediction of how GHG emissions would grow in the absence of a GHG policy. Conducting an emissions forecast was essential for developing the climate action plan because one must compare future reductions with future emissions levels, not current levels.

The projected GHG emissions are based on the emissions from the existing growth pattern and general plan prior to the adoption of this Climate Action Plan. Therefore, the business-as-usual emissions are projected in the absence of any policies or actions that would reduce emissions, including landmark state legislation described in section 1.3. The projections from the 2005 baseline year uses growth factors specific to each of the different economic sectors. Table 1 and Table 2 below summarize the results of the forecast.

Table 1. Pacifica Emissions Forecast for 2020 and 2050

Emissions Sources	2005 ($MTCO_2$)*	2020	Annual Growth Rate	Percentage change from 2005 to 2020	2050
Residential	52,979	53,801	0.10%	1.6%	55,444
Commercial/Industrial	18,349	20,256	0.66%	10.4%	24,070
Transportation	97,459	105,068	0.50%	7.8%	120,216
Waste	14,267	14,488	0.10%	1.6%	14,931
TOTAL	**183,090**	**193,613**	**0.37%**	**5.7%**	**214,660**

* MT refers to metric tonnes

We projected the emissions forecast for each sector, because specific factors affect each sector differently (for example, new building energy codes or new fuel economy standards for vehicles). This bottom-up approach provides a better approximation of future emissions. The following bullet points explain how the emissions forecast was estimated for each sector:

- For the residential energy sector, the compounded annual population growth rate (from 2005 through 2020 and from 2005 through 2035) was calculated using population projections from the Association of Bay Area Governments.
- For the commercial energy sector, the compounded annual population growth rate (from 2005 through 2020 and from 2005 through 2035) was calculated using job projections from the Association of Bay Area Governments.
- For transportation, the city of Pacifica relied on travel demand forecasting and a 0.50 percent per year traffic growth projection, which were derived in conjunction with the

State Route 1/Calera Parkway Project, Final Traffic Operations Report— State Route 1/Calera Parkway Project.[22] The recently passed federal Corporate Average Fuel Economy standards and the state of California's pending tailpipe emission standards could significantly reduce the demand for transportation fuel in Pacifica. An analysis of potential fuel savings from these measures has not been included in this business-as-usual forecast. Regardless of future changes in the composition of vehicles on the road as a result of state or federal rulemaking, emissions from the transportation sector will continue to be largely determined by growth in vehicle miles traveled.

- For waste-related emissions growth, the primary determinate is population. Therefore, the compounded annual population growth rate of 0.10 percent from 2005 through 2020 (the same as the residential sector projection) was used to estimate future emissions in the waste sector.

3.1 Emissions Reduction Targets

The city of Pacifica is committing to reducing community-wide GHG emissions to 40 percent below 2005 levels by 2020. For 2050, our goal is to match the state of California's goal of reducing emissions to 80 percent below 1990 levels. For Pacifica, we do not have a 1990 baseline emissions inventory. However, we can estimate our 1990 emissions levels by assuming that Pacifica's emissions grew at the same rate from 1990 to 2005 as emissions in California as a whole. This places Pacifica's 1990 emissions at approximately 15 percent below 2005 levels. Therefore, to match California's 2050 goal, we have set our 2050 year goal at 95 percent below 2005 levels (a 15 percent decrease to from the 2005 level to the 1990 level, and another 80 percent to match California's state goal of 80 percent below 1990 levels).

The California Air Resources Board's implementation plan for AB 32 seeks to bring to California a low-carbon future, by reducing GHG emissions to 1990 levels by 2020. As part of that reduction, the plan asks municipal governments to reduce their emissions by 2020 by at least 15 percent from 2005 levels. The plan also directs local governments to assist the state to meet California's emissions goals. Many cities have interpreted this to adopt community-wide emissions reduction targets at least 15 percent below 2005 levels by 2020. Some cities in the Bay Area have sought even stricter emissions targets. For example, since 2002 the city of San

[22] Fehr & Peers, 2008. Final Traffic Operations Report. State Route 1/Calera Parkway Project. Prepared for Caltrans, SanMateo Transportation Authority, and Mark Thomas & Company, July.

Francisco has sought to reduce its emissions to 20 percent below 1990 levels by 2012.[23] Seattle, Portland, and Denver have set similar targets.

The City of Pacifica is committing to reducing community-wide greenhouse gas emissions to 40 percent below 2005 levels by 2020, a reduction of 83,759 metric tonnes of carbon-dioxide equivalent.

This climate action plan summarizes the actions that the city of Pacifica is planning to take to reduce emissions within our community. In addition to the actions outlined here, regulations aimed at reducing GHG emissions at state and regional levels will also contribute to emissions reductions in Pacifica. For example, California's RPS mandates that 33 percent of electricity sold by the state's investor-owned utilities be generated from renewable resources by 2020. These regulations were summarized in section 1.3 of this report.

[23] San Francisco Department of the Environment and San Francisco Public Utilities Commission. 2004. Climate Action Plan for San Francisco. September. http://www.sfenvironment.org/downloads/library/climateactionplan.PDF

Figure 3 illustrates how business-as-usual emissions are estimated to increase, thus widening the emissions reductions needed by 2020. Table 2 summarizes business-as-usual forecasted emissions and emissions required against target years.

Figure 3. Pacifica GHG Reduction Target

The target for 2020 is 40 percent below 2005 levels. The target for 2050 is 80 percent below 1990 levels

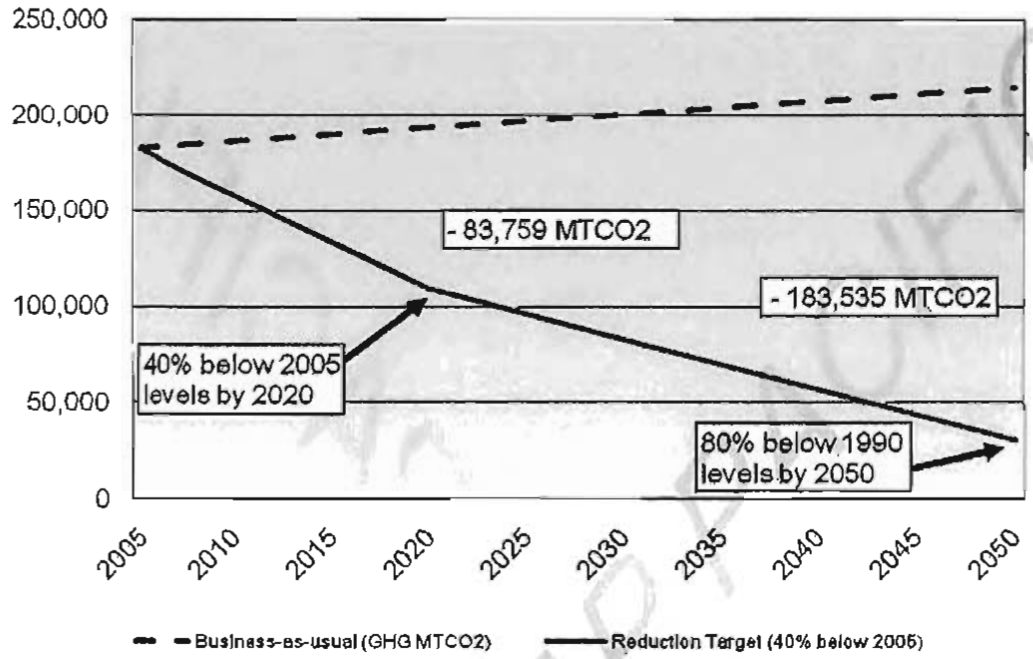


Table 2. GHG Emissions Projection and Reduction Target

Year	Population*	Business-as-usual (GHG $MTCO_2$)	Reduction target emissions level	Required reductions ($MTCO_2e$)	CAP per capita emissions ($MTCO_2e$/person)
2005	38,700	183,090	183,090	--	4.7
2020	39,300	193,613	109,854	-83,759	2.8
2050	40,500	214,660	31,125	-183,535	0.8

4. Climate Action Strategies

A climate action plan is a beginning of a long journey toward a more sustainable Pacifica. In these pages, the residents of Pacifica will find policies and programs that aim to reduce emissions, save energy and money, and help Pacifica continue to grow into a beautiful and healthy place to live, work, and play.

By adopting this climate action plan, the city is committing to taking action to reduce GHG emissions. The plan provides a prioritized list of actions, each of which should be further developed, studied, and vetted independently before being implemented. The programs and policies described give Pacifica a viable path toward reducing emissions that, combined with emissions reductions resulting from state and regional policies, will meet the emissions reduction goals established in Pacifica's Climate Action Plan.

The previous chapters presented milestones 1 and 2 in the climate action plan framework: the emissions inventory of Pacifica and the community emissions reduction target. The following sections represent milestone 3: the climate action plan. These sections are the specific actions, which we call *measures*, that seek to reduce GHG emissions from Pacifica.

4.1 Energy

In the United States, buildings account for 70 percent of total electricity use and about 40 percent of GHG emissions.[24] The state of California has long been a leader in implementing policies aimed at improving the energy efficiency of its building stock. The state is committed to meeting its energy needs "through all available energy efficiency and demand reduction resources that are cost effective, reliable and feasible."[25] Since the 1970s, California has led the nation in developing and implementing successful energy efficiency efforts. More recently, California has set targets for *net-zero-energy* new buildings, in which efficiency and on-site generation are combined to reduce residential buildings to zero net-energy use by 2020 and non-residential buildings by 2030.[26]

While not the largest emissions category, building energy is the sector with the most immediately achievable and affordable reduction opportunities. Energy efficiency is the most

[24] Fuller, M. C., S. C. Portis, and D. M. Kammen. 2009. "Toward a Low-Carbon Economy: Municipal Financing for Energy Efficiency and Solar Power." Environment Magazine, January–February.

[25] California Public Utilities Commission. Public Utilities Code § 454.5(b)(9)(C) as cited: http://docs.cpuc.ca.gov/published/FINAL_DECISION/91068-01.htm (last access 2/28/2012)

[26] California Energy Commission. 2007. Integrated Energy Policy Report 2007. CEC-100-2007-008-CMF.

cost-effective measure to reduce GHGs and also has numerous co-benefits, such as improving cost savings over time and promoting green collar jobs. The design and construction of new buildings, or the major renovation of existing ones, provide an opportunity to implement energy-saving measures that reduce GHG emissions. Generous utility rebate and federal tax incentives make investing in energy efficiency in existing homes increasingly attractive. Along with energy efficiency, California has a long history of supporting renewable energy generation. With the idea of *reduce, and then produce*, a sensible energy policy will seek to first maximize energy efficiency and then look to generate electricity with low-carbon fuels and renewable resources.

The city recently adopted a green building ordinance requiring construction projects to integrate measures that promote energy and water efficiencies and encourage the production of renewable energy in both existing and new buildings. The city also participates in the Energy Upgrade California program that facilitates funding for residents that make changes to their homes to increase energy efficiency. The city will continue to monitor and update its programs and policies to further promote efficient use of resources and reduce GHG production.

4.1.1 Goal: Require Green Building Practices in Both the New Construction and Remodel Market

Since half of the buildings that will exist in 2050 have already been built,, a significant emphasis must be placed on promoting retrofits of those existing buildings. The new buildings that are being constructed today are also likely to remain in the built environment for another 100 years or so with significant long-term impacts. Reducing the consumption of electricity, natural gas, and water as well as promoting environmentally sustainable material use will require aggressive implementation of green building practices in the city.

At the end of 2010, the city of Pacifica passed a green building ordinance for both residential and non-residential construction projects, including mixed-use and city-sponsored projects. Using a graduated scale, residential building and remodeling projects are required to meet increasing levels of green building compliance protocols according to the project's value.

Table 3 below summarizes the estimated GHG reductions associated with the green building ordinance.

Table 3. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Non-residential green building ordinance	Establish minimum compliance levels and requirements for new construction projects, and alterations, and additions to existing buildings. City-sponsored projects to be LEED* Silver in first year following ordinance adoption.	34
Residential green building ordinance	Establish minimum compliance levels and requirements for new construction projects, and alterations and additions to existing buildings. Require GreenPoint Rated or LEED checklist as a minimum, and better than Title 24 requirements for larger projects. GreenPoint Rated and LEED certification required for the largest projects.	103

* Leadership in Energy and Environmental Design

4.1.2 Goal: Expand Energy Efficiency and Renewable Energy in the Residential, Commercial, and Public Sectors

Most homes in Pacifica were built prior to the enactment of state energy codes and have significant potential to increase their energy efficiency and water conservation. Typically, homes can increase their energy efficiency 30 to 40 percent.[27] Energy efficiency programs can begin to help Pacifica residents to reduce energy consumption and costs. Similarly, most businesses spend approximately 30 percent of their operating budget on energy costs. Providing businesses with energy efficiency resources can help businesses save on utility costs and reduce emissions.

Achieving significant reductions in energy consumption in the residential sector will require both public and private investment but will result in cost savings and local job opportunities over time. PG&E offers various incentives to residents for purchasing energy efficient appliances, such as dishwashers and washing machines. Information about these incentives is available on PG&E's website; however, many residents do not know that they can receive money for qualifying purchases. The city can partner with PG&E to make residents aware of these programs.

Encouraging or mandating retrofits of existing buildings has proven challenging for many cities, due to significant market barriers. Often, building owners lack the incentives to upgrade

[27] California Public Utilities Commission. 2008. Long Term Energy Efficiency Strategic Plan. San Francisco: California Public Utilities Commission.

inefficient equipment, especially in the case of a rental property where the benefit of the upgrade accrues to the renter who pays the utility bills. However, nearby jurisdictions—San Francisco and Berkeley—have claimed considerable success implementing residential and non-residential energy conservation ordinances (RECO [residential energy conservation ordinance] and CECO [commercial energy conservation ordinance]) that continually improve energy efficiency in existing residential buildings.

The city of Pacifica will develop an ordinance requiring all residential and commercial properties that are undergoing title transfers to meet minimum energy efficiency and water efficiency standards. The ordinance could be phased in after 12 to 18 months of voluntary education and promotion to local residents. The ordinance could be modeled after Berkeley's RECO and CECO ordinances that require title-transfer properties to comply with energy and water efficiency measures, such as installing ceiling insulation, low-flow toilets and showerheads, and so forth. The city of Berkeley's measure caps total costs for residential energy upgrades under the ordinance at three-fourths of 1 percent of the residence's total sale price.

On-site renewable energy systems offer another important lever for reducing emissions. Renewable energy systems should be installed only after all cost-effective efficiency measures have been implemented. Generally, the best renewable energy installation options for San Francisco Bay Area residents are solar hot-water heating and roof-top photovoltaic systems. The largest barrier to on-site renewable energy is high up-front financing costs and long cost-recovery periods. PG&E and the state of California offer incentive programs that help defray the initial investment of energy systems. A recently passed California bill, which implements a feed-in tariff, will pay small renewable energy generators for the electricity they generate.

The city of Pacifica will encourage Pacificans to take advantage of Go Solar California tax credits and other federal, state, local, and PG&E credits. Benefits of solar energy generation include lower energy bills, shelter from increased energy costs, and increased home and business value.. The California Energy Commission also provides rebates for the installation of renewable energy systems in homes, including rebates for small wind-turbine generation systems.

Table 4. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Participate in Energy Upgrade California program and promote existing rebates (PG&E, state, federal)	City provides, or encourages, residential and commercial energy audits and retrofits. Leverage existing rebates/add additional rebates for energy efficient retrofits, including promoting and assisting with marketing and outreach for PG&E commercial and industrial programs.	11

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Residential energy conservation ordinance (RECO)	Require installation of prescriptive energy efficiency measures (energy efficiency checklist) during title transfer, based on sale price	700
Commercial energy conservation ordinance (CECO)	Require installation of prescriptive energy efficiency measures (energy efficiency checklist) during title transfer, based on sale price	520
Incentivize solar energy installation	Provide financial incentives for solar photovoltaic and hot-water system installation. Meet with local banks and discuss creative ways to partner for low-cost financing of renewable energy and energy efficiency projects. Provide free assistance for project developers through the power purchase agreement (PPA) and interconnection process. Encourage bulk purchases, such as the Portola Valley Bulk purchase through Solar City.	23

4.1.3 Goal: Promote Energy Efficiency and Renewable Energy in Government Operations

The city of Pacifica recognizes the importance of reducing its overall energy consumption and considers integrating energy efficiency and renewable energy sources into its operations as top priorities to realize its municipal reduction goals. In 2009, the city conducted a year 2005 GHG inventory of its government operations to benchmark current emission sources and to identify key mitigation strategies for various sectors. Results of the inventory indicated that municipal solid-waste treatment facilities and wastewater were the largest contributors to GHG emissions, with 2,197 metric tonnes of carbon-dioxide equivalent (CO_2e) and 1,956 metric tonnes of CO_2e respectively.[28] Solar photovoltaic projects at the Calera Creek Water Recycling Plant and Sharp Park Pump Station have aided emissions reductions by generating roughly 360 kilowatts (kW) combined.

Pacifica's municipal treatment facility can capitalize on opportunities to upgrade its equipment and building elements to maximize GHG-emission savings and reduce its overall operating costs. Typical upgrades for this facility type would include installing variable-frequency drives, energy efficient motors, and pumps and motor systems and performing heating ventilation and cooling system retrofits and lighting retrofits. Beyond the conventional upgrades, further retrofit

[28] City of Pacifica 2005 Government Operations Greenhouse Gas Emissions Inventory. Prepared by ICLEI – Local Governments for Sustainability USA.

opportunities can be realized through cogeneration (combined heat and power) and wind energy generation.

Pacifica's remaining municipal sectors that contribute to GHG emissions have initiated an audit process to identify energy deficiencies and upgrade opportunities. According to the results of recent energy audits conducted by PG&E in 2010, Pacifica's Police Department and Community Center have numerous areas within their respective buildings where significant energy and cost savings can be achieved. Interior and exterior lighting system retrofits represent the most savings for both operations, given each building's extended business hours. Beyond lighting, other energy efficient upgrade opportunities for all Pacifica municipal operations include installing system controls, more efficient water heaters, weatherization, and shading devices, harvesting daylight, and performing heating, ventilation, and air conditioning system upgrades and routine maintenance to all equipment, appliances, and systems.

The city should consider ways to reduce the total illumination and energy use by its streetlights, such as replacing incandescent streetlights with more energy efficient combined heat and power models. Pacifica operates a range of public lighting measures, including streetlights, traffic signals, and other outdoor lighting. The amount of electricity consumed operating this infrastructure is a significant source of GHG emissions. In 2005, public lighting in Pacifica consumed a total of 967,492 kW-hours of electricity and produced approximately 219 metric tones of CO_2. The city of Pacifica, in conjunction with PG&E, is in the process of establishing an undergrounding project in the Palmetto Avenue Neighborhood. The community spent two years developing a streetscape master plan for the neighborhood that will be implemented while the underground work occurs by PG&E. With the master streetscape plan and the underground work in development, the city of Pacifica is also going to replace older streetlights in the project's area with energy efficient streetlights. The lights will be light-emitting diodes (LED) streetlights and are far more cost effective as well.

The city should ensure that streetlights and other public outdoor lighting are on only for the minimum times needed. The city of Pacifica could consider developing a lighting ordinance to reduce nighttime light pollution and lighting energy use. A useful starting point for such an ordinance could be the *Model Lighting Ordinance* developed by the Illuminating Engineering Society of North America and the International Dark-Sky Association[29] and should be consistent with Pacifica's regulations.

[29] Illuminating Engineering Society and International Dark-Sky Association. 2011. Model Lighting Ordinance (MLO)–2011. June 15. http://docs.darksky.org/MLO/MLO_Approved_with_Annex_A_revisions_January2012.pdf

The goal is to save energy, thereby lowering GHG emissions by reducing lighting levels to a minimum amount to allow for public safety. This may be achieved by using lighting fixtures that concentrate light where it is needed, thus reduce the amount of energy needed to provide lighting and by using the most energy efficient lighting sources, such as LEDs. A policy-based process could apply to all city street lighting and all city-owned, private commercial, and residential buildings. The city could also coordinate incentives with PG&E's programs and any federal, state, or local monies available to encourage energy efficient street lighting and exterior building lighting.

Table 5. Municipal Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Energy efficient street lighting	Replace street and signal lights and park and parking lot lighting with efficient lighting (LEDs, induction, etc).	37
Energy efficiency in municipal buildings	Audit city facilities for energy efficiency opportunities and implement energy efficient retrofits. Participate in San Mateo County Energy Watch and leverage benchmarking to identify opportunities for efficiency upgrades and tracking energy performance.	10

4.2 Transportation and Land Use

Thirty-eight percent of the California's GHG emissions stem from transportation[30]—the cars and trucks that move people and goods throughout the state. In Pacifica, 50 percent of GHG emissions stem from transportation. Thus, reducing transportation emissions is a critical component of the climate action strategy.

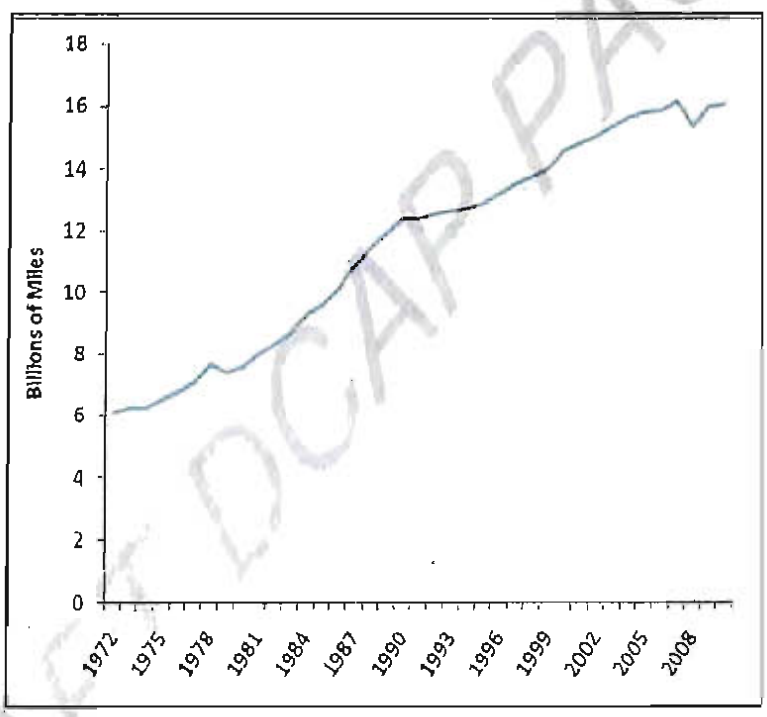
Reducing emissions from the transportation sector requires addressing three constituent components: reducing the carbon intensity of fuels, increasing vehicle efficiency, and reducing vehicle-miles-traveled.

Fuel carbon intensity, defined as the amount of carbon per gallon, is addressed by the state of California's Low Carbon Fuel Standard, which mandates a 10 percent overall reduction in the carbon intensity of transportation fuels (gasoline, diesel, natural gas, electricity, and so on) by 2020.

[30] California Air Resources Board. 2008. Scoping Plan.

Vehicle efficiency is addressed by California's Clean Cars Law of 2002 (AB 1493), which requires carmakers to reduce global-warming emissions from new passenger cars and light trucks beginning in 2009. The first in the world to reduce global-warming pollution from cars, California's law has now been adopted by 11 other states. Affecting nearly one-third of the U.S. automobile market, this law is projected to reduce global-warming emissions by 64 million tonnes per year by 2020. Addressing the third component, reducing vehicle-miles-traveled is considerably more difficult than the previous two. As Pacifica is a city that was initially a series of bedroom communities, its layout makes for quite a challenge when considering a reduction in vehicle-miles-traveled. Californians have increased the number of miles they have driven per year over the past five decades. Figure 4 shows the growth in vehicle-miles-traveled from 1972 to 2010.

Figure 4. California Growth in Vehicle Miles Travelled (July of Each Year, 1972–2010)



Source: Data from the California Department of Transportation

This growth in vehicle-miles-traveled is attributable in part to following factors:

- Growth in gross domestic product
- Lack of affordable urban-core housing causes people to live far away from where they work
- Lack of viable public transportation options
- Low cost of gasoline

- Urban sprawl development patterns such as bedroom communities separated from retail and commercial centers
- Streetscapes that discourage pedestrian or bicycle access.

In order to reduce vehicle-miles-traveled and its associated GHG emissions, former Governor Schwarzenegger signed Senate Bill (SB) 375 in 2008. SB 375 sets regional emissions targets and tasks regional planning organizations to recalibrate land-use and transportation planning to meet those emissions targets. This climate action plan seeks to meet SB 375 targets for the San Francisco Bay Area for a 7 percent reduction in 2005 levels by 2020 and 15 percent below 2005 levels by 2035 in vehicle-miles-traveled.

Pacifica should incorporate smart growth principles into its *General Plan* update to promote both mixed-use and higher density residential development closer to existing transit routes, thereby encouraging transit-oriented development and meeting the goals of SB 375. Specifically, the city should map and identify the specific neighborhoods in Pacifica where there is either access to existing public transportation or a need for additional public transit options, such as a city shuttle service. A further step would include these existing and potential transit hubs in the planning process and identify where either mixed-use development and/or higher density residential development is appropriate, given walking or biking distance to the identified transit hubs. Locating higher density development within a half mile of existing shopping areas should also be encouraged. This planning strategy will promote the development of small grocery stores and dry goods retail stores in all neighborhoods as a way to reduce driving within Pacifica, thereby making our community more livable and sustainable.

The city should seek funding to operate, support, and promote alternative transportation. Potential funding sources are Measure A funding from the San Mateo County Transit Authority's Alternative Congestion Relief program, which promotes transit and other forms of commuting to reduce the use of single occupancy vehicles, and/or other San Mateo County Transit Authority funding that sponsors carpool, bicycling, and pedestrian programs. Matching state and federal funds can potentially be used to double these funds.

The benefits of integrated planning and sustainable development go far beyond simply reducing the GHG emissions that contribute to climate change and its damaging effects. Well-designed communities provide housing options for all income groups and are supported by a range of transportation options that will yield many other advantages. Among these advantages are:

- Increased mobility and transportation choices
- Reduced congestion
- Greater housing choices
- Improved public health as a result of better air and water quality

- Natural resource conservation
- Economic benefits, such as opportunities for neighborhood economic development and lower costs for community infrastructure
- Reduced dependence on foreign oil
- Greater equity through the provision of improved access to jobs, housing, and everyday needs.

As transportation accounts for half of Pacifica's GHG emissions—and the majority of transportation emissions results from Pacificans and other commuters utilizing Highway 1 to and from work and school—the city should focus on finding alternatives for those commuters who drive alone (or single-occupancy vehicles), to realize a significant reduction in GHG emissions. As discussed in this climate action plan, these alternatives include public transit, ridesharing or carpools for both work and school commuters, and other transportation planning measures that reduce vehicle-miles-traveled. The city and the community should address these key issues to reduce vehicle-miles-traveled that result from commuting to and from work and school in a coordinated manner.

Pacifica is fully committed to providing diverse transportation options that are convenient, safe, and affordable. Policies proposed in this climate action plan will build on existing policies and programs and strive to maintain a quality environment that is environmentally and economically sustainable. The measures described will reduce GHG emissions related to commuter traffic, student and school traffic, and municipal operations, as well as reduce the amount of time and emissions associated with idling vehicles. To the extent feasible, the city should retain our current SamTrans service and advocate for new or increased services for underserved routes, including those areas identified as suitable for transit-oriented development in the *General Plan* update process and the sustainable community strategy.

4.2.1 Goal: Encourage Development that Supports Pedestrians, Bicyclists, and Transit Users and Reduces Driving

Since 1990, unprecedented population increases throughout California's communities have initiated a boom in residential and commercial development. Efforts to reduce urban sprawl dominate development planning and practice, where sustainable development ideologies, also known as smart growth, are becoming the norm. Land-use is closely linked to transportation because the orientation of destinations requires travel and determines how these trips are made.

Metropolitan regions similar to the Bay Area and communities, like Pacifica, have witnessed diminishing open space and the affects of urban sprawl and recognize the need to rethink future regional/city planning and development policies. Smart growth principles are grounded in the

concepts of urban infill and revitalization: of existing neighborhoods, situating transit-oriented development in close proximity to services, and promoting alternative transportation and walkable communities that have direct access to both natural and urban environments. A project commissioned by the California High-Speed Rail Authority, in partnership with the California Strategic Growth Council, called Vision California, is modeling statewide growth scenarios to compare physical growth alternatives.[31] One comparison, where a business-as-usual scenario and a smart growth scenario were compared, found that GHG emissions for the state of California could be reduced by approximately 70 million metric tonnes of CO_2e through smart growth strategies. Other significant social, economic, and environmental benefits were also realized.

In preparation for increasing population growth, Pacifica is in the process of incorporating smart growth principles into its current *General Plan* update to mitigate impacts associated with sprawl. This planning includes promoting mixed-use development, including small grocery stores and dry goods retail stores in all neighborhoods as a way of reducing driving within Pacifica. Higher density development near existing shopping areas is also under consideration.

In addition, Pacifica recently developed a streetscape plan for Palmetto Avenue. Once implemented, Palmetto Avenue will include design features that improve the appearance of the neighborhood, slow vehicle traffic, and provide a more pleasant pedestrian environment. These changes are intended to attract more businesses to the area and promote walk-ability to neighborhood residents and visitors. The city of Pacifica intends to implement similar measures in other parts of the city as funding permits.

Table 6. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Smart growth development	Establish a smart growth policy that prioritizes infill, high density, transportation- oriented and mixed-use development. Reward smart growth projects located less than ¼ mile from transit or ½ mile from shopping or jobs.	2,980
Walk-able/bike-able street landscape	Remake urban landscape to make walking and biking more desirable, for example, create bike lanes, bike parking, traffic-calming beautification trails, and so on.	46

[31] California High-Speed Rail Authority and the California Strategic Growth Council. 2011. Vision California, Charting Our Future: Statewide Scenarios Report. Prepared by Calthorpe Associates. June 26. http://www.visioncalifornia.org/reports.php

4.2.2 Goal: Improve Services and Support for Public Transit Users, Bicyclists, Pedestrians, and Alternative Transportation Users

Public transportation use is one of the best ways to reduce GHG emissions, energy consumption, and traffic congestion. It can considerably reduce the amount of miles driven by all vehicles within a given time frame and area (quantified as vehicle-miles-traveled). Furthermore, public transit can be one of the safest modes of travel, more cost-effective compared to a single passenger vehicle, and is effective for improving air quality and creating strong neighborhood centers.

The city participates in the Metropolitan Transportation Commission's Sustainable Community Strategy effort to bring public transportation to Pacifica. Although Pacifica currently has several bus routes, many routes have been cut from SamTrans' bus program over the past decade, which greatly impacts Pacifica's residents.

To promote public transit use, Pacifica should take the following actions:

- Generate increased ridership by promoting the city's website link that provides current information on public transit opportunities at every bus shelter, if possible. Post schedules, information phone numbers, and/or lighted displays for next-bus timing.
- Promote increased walking, bicycling, and public transit use for getting to school and to work by holding a bi-annual "Walk, Bike, and Transit to School and Work Day" during which everyone will be encouraged to find alternatives to driving. The day's purpose is to collectively break down the social barriers that prevent residents from using public transportation and share information to get residents out of their cars. City officials could be encouraged to take public transit that day, and parents could ride the bus with their children to school, or walk with groups of kids to school.
- Provide shuttle service, and encourage enhancements to shuttle services, which can be facilitated by applying for grants, involving community groups (such as seniors, PTA, commuters, and religious organizations) and encouraging Pacifica residents to attend the San Mateo County Transit Authority's Citizens Advisory Committee and Board of Directors meetings. The city should seek Measure A funding to fund local shuttles to and from Colma's BART station to Pacifica's identified transit hubs, shopping centers, and/or Park-and-Ride locations. Educate the community about local shuttle programs and the availability and timing of these shuttles to promote ridership. The city should work with SamTrans and the San Mateo County Transit Authority to expand Colma BART's express shuttle service (SamTrans Bus Line 118) to run late in the evening and during the daytime and on weekends to encourage more ridership on both the bus and BART.
- Encourage the Transit Authority/SamTrans to offer discounted fares or raise parking fees at BART to make service more cost-effective than driving.

- Suggest that the Transit Authority use smaller, more-fuel-efficient buses that require lower operator drivers license class to keep costs down.
- Work with the Transit Authority to coordinate connection times with Pacifica's other local lines to increase convenience and reduce travel times. These suggestions could be applied county-wide, via SamTrans, to make services less costly, more efficient, and more convenient.
- Work with SamTrans (as well as other transportation agencies) to increase both the number of Pacifica's neighborhood bus routes as well as the frequency of buses.
- Retain and promote Pacifica's current shuttle service, which operates through the Senior Services Division of the Parks, Beaches and Recreation Department as well as participates in the Meals on Wheels program for seniors.

In addition to public transit, the city regularly pursues opportunities to expand and improve its existing multi-use trail system. These expansions and improvements increase regional trail connectivity, and thereby provide a safe transportation option to bicyclists and pedestrians that wish to travel within Pacifica and to/from nearby cities. The city of Pacifica is also interested in establishing a walking path plan that optimizes safety and accessibility for bicyclists and walkers (for example, curb cuts for wheelchairs/strollers/bike accessibility).

The city should work with schools and community organizations to create a Safe Routes to Schools program that encourages students to walk and bicycle to and from schools and parks safely. The city should ask schools to consider developing strategies for students to attend the school closest to their home if reasonable. Such programs enable community leaders, schools (public and private), and parents to improve child safety and encourage more children to walk and bicycle to school. In the process, these programs work to reduce traffic congestion and improve individual's health and the environment, making communities more livable for everyone. Efforts to increase school attendance by neighborhood need to be balanced with maintaining the distinctive nature of each of Pacifica's schools and the parent choices provided by distinctive schools.

The city should work with schools to encourage and/or incentivize students to use car pools and public transportation (parent chaperones may be appropriate for younger students), and the city should ask schools to investigate staggering school start times outside of rush-hour traffic periods to reduce traffic congestion.

Pacifica should develop plans so that every neighborhood in Pacifica has safe bicycle and walking routes to nearby shopping areas and schools. Actions would include:

- Reviewing the existing bicycle transportation plans to install bicycle route signs, bicycle racks, and bicycle connectivity route maps.

- Publishing Pacifica bicycle and walking routes and bike parking maps on the city's website.
- Creating a bicycle working group comprised of city staff and interested residents to implement the subsequent bullet and increase walking and bicycling in Pacifica.
- Incorporating these plans into the updated General Plan and participate in future plans for an east-west walking and biking path that traverses the foothills to the other side of the peninsula.

The city should investigate the feasibility of developing a ride-share program specifically for the city of Pacifica that identifies its top five to ten sites that would be accommodated by such a program. There is an existing Bay Area ride-share program called SF Bay Area 511, found at http://rideshare.511.org/, that identifies two Pacifica locations as part of its Bay Area ride-share program. These locations are the Park-and-Ride parking lot locations at Highway 1 and Crespi Drive and at Linda Mar and Highway 1. In order to better design and implement a Pacifica-specific ride-share program, the city could undertake a comprehensive public survey of its residents to identify their driving patterns outside of Pacifica for work or school. Survey responses could be used to develop a ride-share program that allows drivers and riders to plan a ride in a matter of minutes using social networking through computers and smartphones. The survey's input would also help identify the commute routes and mobile technologies to include in a pilot. The city could investigate if funding is available for a real-time ride-sharing pilot; these programs have been funded by the Metropolitan Transportation Commission's Climate Initiative Program in other counties.

Table 7. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Improve public transit service	Increase shuttle service within city limits to connect areas not covered by public transit. Seek funding, including Measure A dollars, for local shuttles to and from key Pacifica locations to Colma BART. Encourage increased ridership by promoting public awareness of the city website link with public transit information. ▪ Work with SamTrans to expand Colma BART's express shuttle service (SamTrans line 118) to run late in the evening and during daytime and on weekends to encourage more commuters and non commuters to use bus and BART. ▪ Offer discount fares or raise parking fees at BART to make service more cost effective than driving. ▪ Use smaller, fuel efficient buses that require lower operator license class to keep costs	46

	down. ▪ Coordinate connection times with Pacifica's other local lines to increase convenience and reduce travel times These suggestions could apply county-wide to SamTrans to make service less costly, more efficient, and more convenient.	
Safe routes to schools	Establish bike trails and safe pedestrian routes to local schools (infrastructure). Encourage school districts to investigate staggered school start times to reduce rush-hour traffic and to develop a car-pooling incentive program.	356

4.2.3 Goal: Expand Policies to Promote the Use of Fuel Efficient Vehicles and Low-carbon Fuels

Where it is not possible to reduce the number of miles traveled by car, the city aims to reduce the GHG emissions associated with driving a car. This can be done in two ways: increase the fuel efficiency of vehicles and reduce the carbon content of the fuels used. Hybrid electric vehicles reduce the amount of gasoline needed to power a vehicle over a given distance. Fully electric vehicles (such as plug-in electric vehicles) have also been shown to significantly reduce GHG emissions compared to conventional gasoline and diesel-powered vehicles, according to a recent study by the Electric Power Research Institute and the Natural Resources Defense Council.[32]

While a variety of other low-carbon fuel sources, such as hydrogen and compressed natural gas, had previously been under development for use as replacements for gasoline and diesel, electric vehicles are believed to be one of the most viable emerging low-carbon fuel sources. This is due to the relatively low infrastructure barriers to market entry, which rely mainly on an existing power grid infrastructure, and the commercial availability of hybrid electric vehicles that are already highly popular in the market. The city should develop policies to encourage the installation of public electric-vehicle charging stations at hotels, municipal parking lots, and shopping center parking lots. Another idea is to participate in national plug-in electric vehicles initiatives, such as the Plug-In Partners, which is a national grass-roots initiative that seeks to demonstrate to automakers that a market for flexible-fuel plug-in electric vehicles exists.

[32] Electric Power Research Institute and Natural Resources Defense Council. 2007. Environmental Assessment of Plug-In Hybrid Electric Vehicles, Volume 1: Nationwide Greenhouse Gas Emissions. Report # 1015325. July. http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/EPRI-NRDC_PHEV_GHG_report.PDF

The city's fleet encompasses necessary vehicles ranging from police cars to maintenance trucks to forklifts that all serve important jobs to keep the community safe, clean, and attractive. The city is committed to continuing its practice to keep engines properly tuned and tires properly inflated to improve fuel efficiency. A municipal fleet efficiency policy may include assessing the operating costs and annual mile usage of each vehicle to compare costs per mile of each fleet vehicle. These types of metrics can provide information to ensure fleet operations' cost effectiveness and reduced GHG emissions.

Table 8. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential (MTCO2/Year)
Preferred parking policy	Set up during planning reviews that new or redeveloped commercial spaces establish preferred plug in parking spaces. Provide tax incentive(s) for hotels with charging stations or require developers of new retail and hotels to install charging stations. Encourage installation of electric vehicle charging stations where large number of cars park, such as at shopping centers.	5
Efficient fleet policy	Adopt sustainable purchasing policy to require purchase of efficient vehicles and low-emission government vehicles. Maintain existing vehicles for optimum mileage. Establish government operations idling policy. Retire underused and less efficient fleet vehicles. Partner with City Car Share to integrate plug-in electric vehiclesinto the fleet vehicle pool.	155

4.2.4 Goal: Establish a Policy that Requires Transportation Demand Management Strategies for New Subdivisions

Transportation Demand Management refers to a set of comprehensive strategies to reduce vehicle trips and vehicle-miles-traveled by promoting transportation alternatives, such as public transit, carpooling, bicycling, walking, and telecommuting. The city could include a transportation demand management policy and guidelines in permit packets for all new developments, including CEQA Guidelines about determining the affects of GHG emissions resulting from various development alternatives..

4.2.5 Goal: Promote the Use of Fuel Efficient Electric and Biodiesel Vehicles in the Community.

Actions would include:

- Incentivize solar and wind systems to use for charging electric vehicles as well as building energy. Then, the carbon footprint for these vehicles becomes even smaller. The federally sponsored property assessed clean energy program could help finance these incentives, and allow special assessments for solar/wind, when possible.
- Develop a policy to encourage or require developers of new retail facilities (larger than a certain size) and hotels/motels to install electric-vehicle charging stations.
- Support commercial efforts to develop a local recycled-grease biodiesel production and/or sales outlet. This would supply another option for reducing vehicular GHG emissions for city vehicles, residents, and Highway 1 commuters and travelers from other towns.
- Encourage drivers to adopt climate-friendly driving habits, such as:
  - Maintaining their vehicles. For optimum efficiency, change oil filter and oil and maintain optimal tire pressure (keeping tires properly inflated can reduce gasoline consumption by 6 percent).
  - Reducing driving speed. Driving slower and smoother can significantly reduce fuel consumption.
  - Reducing mileage driven. Drive less, combine trips, take alternative transportation, and carpool.
- Focus education and outreach to encourage residents to consider fuel efficiency when purchasing a new or used car. Efforts may use the following channels: city website, eNewsletter, Fog Fest, car shows, schools, and so forth

4.3 Solid Waste

Diverting materials from landfills, which can instead be reduced, reused, recycled, or composted, is one of the major strategies Pacifica's residents can use to reduce GHG emissions. When organic materials, such as food, wood, yard waste, paper, and so on, are buried in a landfill, they decay in an oxygen-free environment that produces methane (CH_4) gas. Methane is an extremely potent GHG, such that one pound of methane is considered to be equivalent to 21 pounds of carbon dioxide in its ability to act as a GHG. Some modern landfills are designed to capture as much methane as possible and burn it to produce electricity. However, for many other landfills, the methane escapes into the atmosphere where it contributes to atmospheric warming. This methane leakage is the primary source of Pacifica's solid-waste GHG emissions.

GHG emissions are also associated with the lifecycle of product manufacturing. Upstream (the early production phases) from the consumer, fossil fuel energy extracts the raw materials (such as wood, metals, and so on) to make a product. Even more resources and fossil fuels are used to package and ship a product and ultimately to move and transport the waste from the

consumer's curbside to a landfill. Whether a product can be reused has a significant impact on the upstream manufacturing cost, since it is more expensive to make a product from raw materials than by recycling the product (for example, melting down an aluminum can to make a new can). The concept of *zero waste* includes products that are reusable or recyclable. While these emission sources do not show up on Pacifica's GHG inventory, it is important that consumers are aware of a product's upstream GHG emissions contribution, that buying decisions can influence this profile.

Reducing consumption, reusing items, and recycling products are powerful actions for reducing emissions throughout the life cycle of a consumable. Each contributes to the reduction of the energy-related CO_2 emissions during the manufacturing process. Recycling and composting consumables reduce emissions that would otherwise occur when treating these materials as a waste. The U.S. Environmental Protection Agency estimates that if a city of 100,000 people with an average per capita waste generation of 4.5 pounds per day with a 30 percent recycling diversion rate were to increase that diversion rate to 40 percent, those citizens would reduce their city's emissions by more than 3,400 metric tonnes of CO_2e per year.

4.3.1 Goal: Set Policies for Increasing Diversion Rates

It is the city's desire to lead by example and to increase its recycling and compost collection rates to reduce the amount of materials going to landfills and consequently emissions. To support sustainable resource management and landfill diversion, the city will adopt a policy of 75 percent waste diversion by the year 2020 and a zero-waste diversion equivalent by 2030. Achieving these goals will require coordination among public and private stakeholders. In support of these goals, the city approved a new solid waste management contract, and this vendor is partnering with the city to provide the necessary support and incentivizing fee structure to achieve the zero-waste goal. With this new partner, the city has established a comprehensive commercial and residential recycling, compost, and solid waste management program. In its first year of operation, the diversion rate increased from an average of 42 percent in 2010 to 51 percent for 2011.

Table 9. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2e$/Year)
Set higher diversion rate	Increase participation in recycling programs and	1,287

goal	ensure weekly collection of recyclables and organic waste	
Establish a zero-waste policy	Government policy to achieve 75 percent diversion by 2020 and zero waste rate by 2030.	71 (75% 2020)

4.3.2 Goal: Require Recycling and Composting in the Community (Supporting Measures for the Higher Diversion Rate Goal)

The city has implemented several approaches to recycling and composting in Pacifica to address the challenges posed by the municipal, commercial, and residential sectors of the program. The community as a whole aims to meet a 75 percent waste diversion rate by the year 2020 that is parallel with the city's municipal goal of 75 percent. Commercial customers of multifamily unit properties are provided recycling containers and tote bags to encourage each unit to recycle. Composting is available to commercial properties for food-scrap and landscape material composting. The city has implemented a mandatory construction and demolition materials program that requires separating and recycling construction debris. In addition, the city has adopted an ordinance banning the use of polystyrene take-out containers.

Residential solid-waste and compost collection occurs weekly, and recycling is collected biweekly. Each residence is given two annual on-call curbside pickups for bulky items for recycling (for example, furniture, small appliances, or electronics). The city's new program also employs a recycle center that is open to residents six days a week to drop off recyclable materials and gently used furniture and working appliances for reuse. Finished compost is made available to the community twice a year for use in gardens and landscaping.

Education and outreach are crucial elements of an effective recycling program. Customers, both residential and commercial, are provided with comprehensive educational materials, in the form of an annual brochure and flyers, as well as the waste hauler's website address that describes the city's residents' recycling options and provides information on county programs for household hazardous waste disposal. The contracted waste hauler works with individual businesses as well as residents to determine the type of containers, programs, and services that will meet the customer's needs. The city also supports several non-profit groups in annual community cleanup and other events that promote waste reduction, recycling, and composting. The waste hauler's recycling coordinator ensures that there is recycling and composting receptacles at all large public events. Among these events is the Citywide Garage Sale, now in its second year, that is sponsored by our waste hauler and Pacificans Care. To ensure items are being sorted properly by business and residential customers, the waste hauler periodically checks recycling and compost containers for cross-contamination and places educational stickers on bins to help customers better differentiate between recyclable and compostable

materials. These new programs and services, which were implemented in 2010, have been well received by residents and business owners alike.

Other creative municipal approaches to recycling and composting enforcement include:

- Requiring businesses and others to set out regular trash in transparent plastic bags to allow spot inspections and enforcement. Bags containing recyclables are not picked up. (Nineteen counties in New York State, the city of Cheektowaga, and the village of Hamburg use this method.)
- Placing brightly colored stickers on garbage containers filled with recycling. In Durham, North Carolina, the stickers say: "Recycle These Items. It's the Law. Penalties Involved."
- Issuing written warnings. Connecticut's state inspectors cite haulers at a waste-to-energy plant in the Litchfield area if they mix recyclables with trash. The plant is a consortium effort between 14 towns.
- Refusing to collect trash unless a recycling bin is also set out. (Practiced in Abington, Massachusetts).

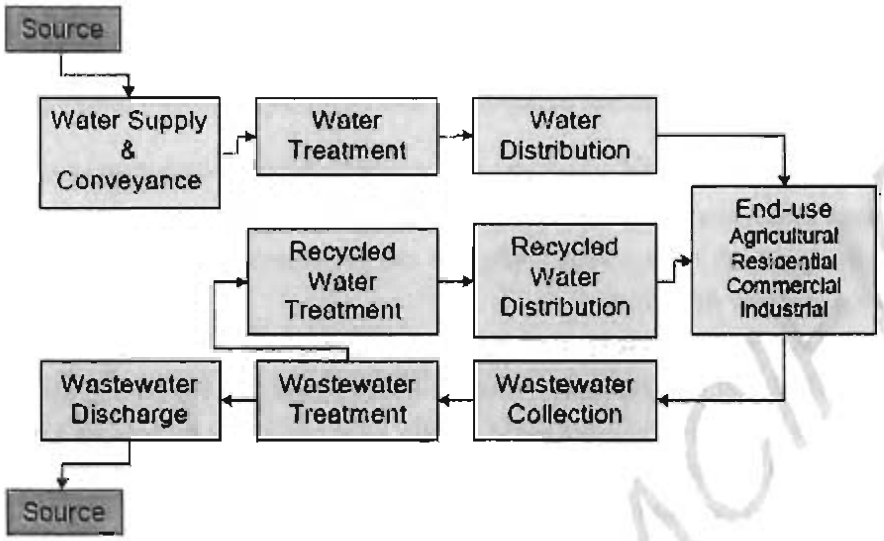
Table 10. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2e$/Year)
Commercial recycling ordinance	Mandate businesses recycling. (Support and enforce state law, require commercial recycling).	Contributes to higher diversion rate goal
Yard waste ordinance	Adopt an ordinance requiring that all landscapers and landscape maintenance businesses recycle/divert yard waste. Provide residents and businesses with food scraps collection bins. Explore a ban on these organics from landfill.	Contributes to higher diversion rate goal

4.4 Water

Water efficiency and conservation decreases the amount of energy required for upstream water collection, conveyance, and treatment and reduces wastewater treatment energy requirements and process emissions. The following diagram illustrates California's water-use cycle.

Figure 5. California's Water-Use Cycle



Source: California Energy Commission[33]

Water is collected, treated, and distributed to end users in agriculture, residences, businesses, and industries. Nineteen percent of the state's electricity and 32 percent of the state's natural gas is consumed during this cycle.[34] Fifty-eight percent of the electricity and 98.5 percent of the natural gas consumption stems from only the residential, business, and industrial end users. Reducing water consumption through efficiency and conservation can make a big impact on energy consumption as well as protect against drought, a common problem in California.

The energy intensity of water conveyance is dependent on the distance water travels and elevation changes it encounters to its end destination. Effective ways of reducing water use include incentivizing reductions in commercial/industrial outdoor irrigation, providing rebates for residential water conservation devices, and utilizing recycled water. Water conservation actions have many benefits beyond reducing GHG emissions. In addition to maintaining water as a sustainable resource for future generations, conservation preserves water quality, buffers communities from the effects of droughts, and sustains wild habitats.

Pacifica has already participated in water conservation efforts such as supporting city-wide water district conservation programs that promote commercial and residential incentive programs. Many of these programs are available to local businesses and the city's residents. The city complied with the state's Model Water Efficient Landscape Ordinance, which was

[33] California Energy Commission. 2005. California's Water-Energy Relationship. Report CEC-700-2005-011-SF. November.

[34] California Energy Commission. 2005. California's Water-Energy Relationship. Report # CEC-700-2005-011-SF. November.

updated in 2009. California's Urban Water Management Planning Act requires every California urban water supplier with more than 3,000 customers to adopt an urban water management plan. In 2009, the state passed the Water Conservation Bill of 2009, which requires urban water suppliers to update their urban water management plan every five years. It also sets a 20 percent reduction target for statewide water use by 2020, which requires local jurisdictions and water districts to act to meet the state wide goal.

4.4.1 Goal: Promote Water Conservation and Efficiency

Pacifica's municipal water is supplied by the North Coast County Water District, which promotes a conservation-oriented relationship with the cities of Pacifica and San Bruno, the agencies it services. Pacifica's community understands the value of this precious resource, and the city has worked hard to promote conservation programs throughout all sectors of the community. According to the North Coast County Water District, Pacifica's water usage has steadily declined in recent years due to conservation programs and infrastructure repairs throughout the system.[35]

In 2008, the San Francisco Public Utilities Commission capped its source water supply, which consequently limits the amount of water distributed to its districts. Statewide mandates reinforce the need to conserve water, and they impose target reductions in per capita water use and *landscape documentation packages* with soil reports and landscape and irrigation design plans with baseline and design case calculations, respectively.

Pacifica has positioned itself well to accommodate legislation that is implemented through city-wide conservation programs and to promote commercial and residential incentive programs available to its residents. The city also adheres to the state's Model Water Efficient Landscape Ordinance and works with the Bay Area Water Supply and Conservation Agency.

The North Coast County Water District has embarked on a reclaimed water project that will serve multiple areas within the city of Pacifica. This reclaimed water will be supplied by the city of Pacifica's Calera Creek Water Recycling Plant and will be delivered (via reclaimed waterlines) to Sharp Park Golf Course, Sharp Park Beach Promenade landscaped areas, the Palmetto Streetscape Project, Fairway Park, Highway 1 (Caltrans), and landscaping and turf playing fields at Oceana High School and Ingrid B. Lacy Middle School. The water district proposes to convert these customers, who are currently irrigating their landscapes with potable water supplied by either the water district or the San Francisco Public Utilities Commission, to use reclaimed, recycled water. Using recycled water for landscape irrigation saves potable

[35] City of Pacifica. General Plan. Chapter 7.

water for drinking-water use. The project will include the installation of a pumping station at the Calera Creek Water Recycling Plant, construction of a new above-ground recycled water tank, and installation of approximately 17,000 lineal feet of pipelines. The new system will also replace several thousand feet of the golf course's irrigation pipelines and a small underground tank.

Table 11. Pacifica Reduction Measures

Measure	Description	GHG Reduction Potential ($MTCO_2$/Year)
Water conservation incentives	Promote existing and/or new rebates for water efficient appliances and fixtures	344
Water conservation ordinance	Adopt the Bay Area Water Supply and Conservation Agency's indoor ordinance, if have not already and both enhance and adopt its outdoor ordinance.	1,146

4.5 Education, Outreach and Empowerment

4.5.1 Goal: Mobilize the community to build a Climate Action Movement

A movement starts with leading-edge, early adopters and builds toward a critical mass. Because Pacifica is a diverse community, it is important to involve all community sectors, including those who may be historically left out or less oriented to action, in the local climate protection effort in a meaningful way. Pacifica will achieve its GHG reduction goals only when the entire community plays a role.

Action: Form Climate Action Plan Committee

We recommend the formation of a climate action plan committee that is responsible for overseeing the implementation of the overall climate action plan. This committee should be comprised of members that represent a cross section of Pacifica's broader community. The mission of the climate action plan committee will be to achieve Pacifica's emissions reduction goals by educating and empowering members of the community to implement carbon reduction actions as set forth in the climate action plan.

The city should consider sending two or three willing community leaders to *Be the Change* leader training, which is a one-year course that helps people build skills to act within the organizations where they work, live, and play to bring about significant changes in how they relate to the natural world. The city of Pacifica may, in accordance with the climate action plan task force's recommendations, fund one or two scholarships that cover the costs for these

community leaders to attend workshops, seminars, and conferences where climate change and climate action planning are the primary focus.[36]

The work of the climate action plan committee will be to define best practices and actions that will help it most effectively fulfill its mission. The following actions are meant to be a starting point of suggestions that the committee may incorporate into its work. This list is not complete; it is only a beginning.

Action: Educate Pacificans about the Significant Environmental Impacts of Consumption

Education is key to understanding how our individual actions influence climate change in very small but incremental ways. As consumers of goods and services, especially goods imported from great distances, Pacificans can make a difference by carefully selecting what they buy, how much they buy, and of how the purchased goods are disposed.

Sustainable consumption and the production of energy and consumer goods have been on the international agenda since 1992 when the United Nations and other agencies identified unsustainable patterns of production and consumption as the major cause of the global environmental degradation. Recent research has produced reports detailing patterns and trends in household energy consumption, their climate change impacts, and policies and measures by which consumption patterns can be changed to promote sustainable development.

Individual household electricity and natural gas use is responsible for less than half of the total energy used by individuals. Energy goes into the production and distribution of most things that households consume, from appliances, to food, to newspapers, to cars. This energy *embodied* in consumer goods, called indirect energy consumption, is usually greater than the energy consumed directly by households; although, this can be difficult to quantify. This indirect energy consumption, which is associated with household consumption in the United States, has been estimated account for 85 percent of the total energy consumed by households. It is also important to note that indirect energy consumption increases with the distance that products or goods travel from their production to purchase locations.

Indirect energy expended for transporting of goods includes fuel used to ship goods from the raw material extraction location to the factory, between factories (if multiple factories are used), from the final assembly factory to the warehouse, and from the warehouse to the retail store (or in the case of online orders, from the warehouse to the consumer). The indirect energy used for shipping has recently increased as more manufacturers, distributers, and big-box discount retailers seek lower priced raw materials and global labor from greater distances.. Additionally,

[36] Acterra is an environmental non-profit serving the Silicon Valley. It provides people with tangible, hands-on activities they can do to improve the environment. http://www.acterra.org/programs/elt/be_the_change.html

direct energy is expended by consumers when they go to stores from their homes or businesses to purchase the goods. This direct energy increases when consumers go to large regional big-box discounters that are at greater distances from their homes or businesses. Therefore, Pacifica should encourage consumers to shop locally and to buy goods that are made from materials obtained and manufactured locally.

Action: Work on the Low Carbon Diet Program

The *Low Carbon Diet* is a program based on a workbook by David Gershon that walks people through simple steps for reducing their household's GHG emissions. The workbook is ideal for informal neighbor-based groups to work on reducing household GHG emissions.

Action: Launch and Maintain a Website to Both Educate the Public and Track Pacifica's Progress to Meeting its Community-wide Emission Reduction Targets

- Community members, including individuals, whole households, and businesses, can quantify their own emissions baseline, pledge to achieve GHG emissions reductions, report their actions taken to reduce GHG emissions, and report their progress toward individual goals. This could be tied to the *Low Carbon Diet* program and Pacifica's Climate Pledge.
- The city should track and report its progress toward achieving the goals outlined in the climate action plan in a transparent and engaging way. (For example, see the city of Benicia's climate portal: http://www.beniciaclimateactionplan.com/home.html.)

Action: Launch a Coordinated Education and Outreach Campaign.

The campaign will utilize a range of tools, programs, and partnerships to mobilize and educate residents. A climate action outreach and education campaign must be designed to effectively communicate the urgency of addressing the climate crisis while also empowering individuals, businesses, and institutions to be a part of the solution. An effective outreach campaign will benefit from the perspectives of many of the city's departments and community agencies with expertise in community engagement. For example, the city's staff is in regular contact with several types of community groups that will be affected by climate change but may not list the environment as their main focus. Such groups include youth organizations; faith-based organizations; food, nutrition, and cultural organizations; and advocacy groups for low-income and other vulnerable populations. Such groups must be included in community outreach efforts to ensure that broad input and participation will turn the plan into action.

Action: Promote a Pacifica Climate Action Pledge

Such a pledge would enable individuals to commit to reducing their own emissions. The pledge is a non-binding means to secure individual commitments for achieving a collective goal. Individuals who sign the pledge will periodically receive helpful action ideas for how to fulfill their

commitment. The city and its community partners should promote the pledge and work to enhance the climate-related resources and information that with which individuals have access once they make a commitment.

Action: Launch a Green Neighborhood Challenge and Green Star Household Program

The challenge would utilize friendly competition and community recognition as motivators for action. The *Low Carbon Diet* program could serve as the guide for neighborhood-level climate protection activities. The neighborhood that collectively reduces the most emissions, through the *Low Carbon Diet* program, wins. In combination with the *Green Neighborhood Challenge*, *Green Star Households* would receive recognition for having low GHG emissions or having significantly reduced their GHG emissions. Such recognition would be a source of pride for households that have made a conscious effort to achieve GHG reductions and to contribute to the community-wide effort. Neighborhoods and households could track their progress on the web-based climate action portal outlined earlier.

A recurring theme in this climate action plan is that the city can play a substantial role in generating awareness and educating its residents about ways to reduce emissions. While the city can help initiate a movement that emphasizes sustainable practices, it is crucial that other members of the community, such as residents and businesses, are engaged in the process to achieve the plan's reduction targets mentioned and to minimize costs. The target will be achieved only by building a movement that achieves sustained action and coordination across stakeholders and sectors.

As mentioned previously, there are numerous opportunities for the city to leverage existing programs funded by the state of California, PG&E, and others to support the community's efforts to improve energy efficiency, to install renewable energy, to facilitate transit/biking/walking initiatives, and other actions, which households and businesses can take. The city of Pacifica will distribute information on funding opportunities for residents and local businesses more widely. Actions may include posting more information on the city's website and posting marketing materials at key city locations, including city hall and libraries. Additional actions may include partnering with PG&E and local water districts to further develop marketing presentations and workshops for the community.

Meeting the challenge of climate change will require commitment and action from all levels of the government, community, residents, and businesses. See Appendix B for more ways residents can reduce their carbon footprint

5. Implementation

The preceding chapters describe the principal sources of the city of Pacifica's GHG emissions and outline related goals and measures to achieve the community's emissions reduction targets to 40 percent below 2005 levels by 2020. This chapter outlines the main components of the process for turning this plan into action and recommends specific actions from earlier chapters for implementation.

Although Pacifica has several GHG reduction policies and initiatives are already in place, the actions proposed in this plan, by necessity, far surpass the scale of its existing efforts. Implementing this plan and ensuring that it results in real and measurable reductions in GHG emissions will require increased coordination across sectors and institutionalized climate protection efforts across the community.

The large number of measures and programs recommended in this plan will take many years to implement, given limitations in both staff time and funding. Therefore, this chapter separates emission-reduction measures into three time periods to enable a phased implementation plan:

- Near term: 0–2 years
- Mid term: 3–5 years
- Long term: 5+ years

The prioritization indicates when a measure's implementation begins, rather than when Pacifica should begin working on the measure. The implementation schedule is based on measures that are most feasible (that is, those likely to occur within a short timeframe) and cost-effective to yield GHG reductions.

Figure 6 shows the number of years each measure will be in effect, based on its implementation schedule. All of the reduction measures included in this climate action plan are essential to reach the goals set forth by city of Pacifica. Therefore, all measures must be implemented by 2020.

Figure 6. Schedule for Phased Implementation of Reduction Measures

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Number of years measure is in effect
Implemented by end of 2011										9 years
		Near-term Implementation by end of 2013								7 years
				Mid-term implementation by end of 2015						5 years
						Long-term Implementation by end of 2017				3 years

5.1 Already Implemented Measures

The city of Pacifica adopted a green building ordinance in 2010 for both residential and non-residential sectors and government buildings. The ordinance will help the city reduce its GHGs through the energy efficiency and resource efficiency, as required by the LEED (for larger non-residential and residential projects) and Build it Green (primary for small residential projects) green building rating systems.

Table 12 summarizes the estimated annual GHG emissions reductions and total emissions reductions expected by 2020. The annual emissions reductions are based on the anticipated number of new properties built each year that will be affected by the ordinance. We estimate that these measures will be in effect for nine years and yield total cumulative GHG reductions of 1,233 metric tonnes of CO_2 by 2020.

Table 12. GHG Reduction Measures Already Implemented

Section	GHG Reduction Measure	Annual GHG Reduction Potential ($MTCO_2$/Year)	Cumulative GHG Reduction by 2020 (Total $MTCO_2$)
4.1.1	Residential green building ordinance	103	927
4.1.1	Non-residential green building ordinance	34	306
TOTAL		137	1,233

5.2 Near-term Measures

These near-term reduction measures are actions that have the most return for the lowest cost. Some of these measures have already begun to be implemented.

Table 13 summarizes the estimated annual GHG emissions reductions and total emissions reductions expected by 2020. The annual GHG reductions are based on the expected number of new households, residents, or community members contributing to additional reductions each year. We estimate that these measures will be in effect for seven years and yield total cumulative GHG reductions of 38,438 metric tonnes of CO_2 by 2020.

Table 13. GHG Reduction Measures Prioritized for Near-term Implementation

Section	GHG Reduction Measure	Annual GHG Reduction Potential ($MTCO_2$/Year)	Cumulative GHG Reduction by 2020 (Total $MTCO_2$)
4.3.2	Commercial recycling ordinance	Contributes to higher diversion rate goal	Contributes to higher diversion rate goal

Section	GHG Reduction Measure	Annual GHG Reduction Potential ($MTCO_2$/Year)	Cumulative GHG Reduction by 2020 (Total $MTCO_2$)
4.3.2	Yard waste ordinance	Contributes to higher diversion rate goal	Contributes to higher diversion rate goal
4.2.1	Smart growth development	2,980	20,862
4.3.1	Set higher diversion rate goal.	1,287	9,009
4.4.1	Water conservation ordinance	1,146	8,021
4.2.2	Safe routes to schools	356	2,492
4.4.1	Water conservation incentives	344	2,406
4.2.2	Improve public transit service	46	321
4.1.2	Participate in Energy Upgrade Program and promote existing rebates (PG&E, state, federal)	11	77
4.1.3	Energy efficiency in municipal buildings	10	70
TOTAL		6,180	43,258

5.3 Mid-term Measures

These reduction measures may take longer to implement than the measures proposed for near-term implementation. However, several of the measures included in this phase will yield significant GHG savings and should be implemented within the next three to five years.

Table 14 summarizes the estimated annual GHG emissions reductions and total emissions reductions expected by 2020. The annual GHG reductions are based on the expected number of new households, residents, or community members contributing to additional reductions each year. We estimate that these measures will be in effect for five years and yield total cumulative GHG reductions of 4,690 metric tonnes of CO_2 by 2020.

Table 14. GHG Reduction Measures Prioritized for Mid-term Implementation

Section	GHG Reduction Measure	Annual GHG Reduction Potential ($MTCO_2$/Year)	Cumulative GHG Reduction by 2020 (Total $MTCO_2$)
4.1.2	Residential energy conservation ordinance (RECO)	700	3,500
4.2.3	Efficient fleet policy	155	775
4.2.1	Walkable/bikeable street landscape	46	230

4.1.3	Energy efficient street lighting[37]	37	37
TOTAL		938	4,542

5.4 Long-term Measures

These reduction measures may be more costly or take a longer amount of time to implement, due to political or technical complexity, than other proposed measures; therefore; we recommend allowing a longer implementation timeline.

Table 15 summarizes the estimated annual GHG emissions reductions and total emissions reductions expected by 2020. The annual GHG reductions are based on the anticipated number of new households, residents, or community members contributing to additional reductions each year. We estimate that these measures will be in effect for three years and yield total cumulative GHG reductions of 1,857 metric tonnes of CO_2 by 2020.

Table 15. GHG Reduction Measures Prioritized for Long-term Implementation

Section	GHG Reduction Measure	Annual GHG Reduction Potential ($MTCO_2$/Year)	Cumulative GHG Reduction by 2020 (Total $MTCO_2$)
4.1.2	Commercial energy conservation ordinance (CECO)	520	1,560
4.3.1	Establish a zero-waste policy	71	213
4.1.2	Incentivize solar energy installation	23	70
4.2.3	Preferred parking policy	5	14
TOTAL		619	1,857

5.5 Meeting the 2020 Emissions Reduction Target

In summary, the measures described in this climate action plan combined with statewide legislation and initiatives will enable the city of Pacifica to meet its emissions reduction target to 40 percent below 2005 levels by 2020.

[37] Street lighting upgrade occurs once (rather than annually), so the total GHG savings in 2020 are the same as in the first year of implementation.

Table 16 shows the relative contribution of the statewide initiatives combined with the community climate action plan measures. As described in Chapter 3, the city of Pacifica needs to achieve 83,759 metric tonnes of CO_2, GHG emissions reductions to meet its 2020 goal. The total estimated GHG reductions described and accounted for in this plan total 84,074 metric tonnes of CO_2.

Table 16. Meeting the 2020 Target

State Initiative	% Reduction from 2020 GHG Inventory	Sector	Reduction in GHG Emissions ($MTCO_2$)
AB 1493 (Pavley)	19.7%	Transportation	20,698
Low Carbon Fuel Standard	7.2%	Transportation	7,565
33% RPS	21%	Electricity (Energy)	5,170
A. Total Statewide Initiative Emissions Reductions			33,433
B. Total City Climate Action Plan Reductions Measures			50,890
Total Expected Emissions Reductions by 2020 (A+B)			84,323
City of Pacifica Emissions Reduction Requirement for 2020			83,759
Meets requirement?			Yes

The total expected emissions reductions from the city's climate action plan measures exceed the minimum reductions required to get to our target. This helps ensure we actually meet our target, even if some of our measures result in fewer emissions reductions than projected or business-as-usual emissions growth are greater than projected. For example, the business as usual forecast assumes that residential GHG emissions will grow at the predicted rate of population growth, one-tenth of one percent annually. Yet, data provided by PG&E, for this inventory indicate that residential electricity use increased at an annual 1.9 percent rate from 2003 to 2007, far greater than population growth.

5.6 GHG Reduction Strategy Management

New city institutions will need to be formed to direct the implementation of this climate action plan's measures. This section details how the city will organize itself to put this plan into action.

- Monitor and update green building regulations periodically to ensure the ordinance is compatible with the latest available green technologies.
- Continue to participate in public education activities. This may include task-force-facilitated public meetings on local programs that are available for energy audits, including Energy Upgrade California and periodic task force meetings to evaluate the

benefits and results of the implemented climate action plan. Education activities may include developing literature to promote programs associated with the climate action plan's implementation, including carbon footprint calculators and a materials alternatives list that proposes alternatives to using materials under voluntary ban including polystyrene. The city may also consider developing ordinances that will further advocate emissions reductions by local businesses coupled with educational programs for local business owners.

- Maintain and add associations/partnerships that will assist the city in developing programs and policies and in attaining funding for activities that will result in GHG reductions in Pacifica.
- Hire a Sustainability Coordinator to be the person with primary responsibility for implementing this climate action plan. If city funds are unavailable to fill this position, the city may elect to create the position as unfunded/unfilled and to use an existing staff member or members to take on the responsibilities of this role. Whether a single staff person or multiple staff, the cumulative time devoted to climate-action-plan-related business must amount to at least one half-time person. When city funding permits, the full-time position of Sustainability Coordinator will be filled.

6. Monitoring and Improvement

Monitoring their progress is a critical component to ensure that emissions targets are met. It is critically important to track the performance of measures as they are implemented and to adjust them as needed in subsequent climate action plan updates. The following describes the overall monitoring and improvement program.

- Every year, the Sustainability Coordinator will issue an annual climate action plan implementation report to update the City Council, Pacifica residents, and other interested stakeholders about the implementation progress for climate action plan measures. This annual report will detail the lessons learned from the prior year and make recommendations for changes to the climate action plan's implementation strategy or to the plan itself. Following the release of this climate action plan implementation report, a 30-day public comment period will be open to allow the community's input on the implementation of the climate action plan.
- The Sustainability Coordinator will track the city's emissions, resource savings, and any other effects of each implemented measure as well as estimate costs and cost savings to government, residences, and businesses. Each measure will be summarized in the annual report and be made available for public review.
- A full GHG inventory, prepared according to the ICLEI's community emissions protocol, will be conducted at least every five years. This inventory will supply the city with data to understand how emissions levels are responding in a top-down manner.

7. Conclusion

While the challenge of climate change is unprecedented, local-level solutions can reduce emissions, improve energy efficiency, promote economic development, and improve resident quality of life. The city of Pacifica has taken a significant step forward for a more sustainable future with this climate action plan. The plan identifies areas and opportunities to reduce GHG emissions within the community and the city's operations, which along with statewide efforts, can achieve our environmental goals. The city of Pacifica is poised to reap the benefits of a clean energy economy with policies that can increase the need for local green jobs.

These are difficult issues. And what can a single individual do? Appendix B provides 10 ways that individuals can reduce their GHG footprint.

While an important first step, this plan will remain a living document: to be updated as technology and policies progress and to support the city's efforts to manage GHG emissions for a sustainable future for all.

DRAFT

Appendix A. Glossary of Terms

AB 32	The California Global Warming Solutions Act of 2006
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
CAP	climate action plan
CAPTF	Climate Action Plan Task Force
CAPPA	Climate and Air Pollution Planning Assistant
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO_2	carbon dioxide
CO_2e	carbon-dioxide equivalent
CPUC	California Public Utilities Commission
EIR	environmental impact review
GHG	greenhouse gas
ICLEI	International Council for Local Environmental Initiatives
kWh	kilowatt hour
MFD	multifamily dwelling
MPO	metropolitan planning organization
MT	metric ton
PACE	property-assessed clean energy
PG&E	Pacific Gas and Electric Company
ppm	parts per million
PV	photovoltaic
RPS	renewable portfolio standard
U.S. EPA	United States Environmental Protection Agency
TOD	Transit-oriented development

Appendix B. Steps to Reduce Your Carbon Footprint

Modified from CoolClimate.org

1. Change your commute

Did you know that one third of the CO_2 produced in the U.S. is from the transportation of people or goods? Pick one day a week to walk, bike, take public transportation or carpool to work or when you are running errands. If possible, live close to your workplace. When driving, remember to combine several car trips into one trip and avoid idling. Additionally, you can get better fuel efficiency by following the speed limit. Exceeding the speed limit by just 5 mph during highway travel results in an average fuel economy loss of 6 percent.

2. Be a better consumer

Remember the three R's Reduce, Reuse, and Recycle. The best way to reduce your carbon footprint from consumption is to buy less stuff. Consider reusing something before buying a new one. And when you have stuff to throw away recycle and compost as much as possible. Did you know that the average American generates about 4.4 lbs of trash each day?

3. Shop locally

The shorter the distance your food travels to your plate or that product travels to your home, the fewer greenhouse gases are produced. Declare one day a week "Local Day" and eat foods produced within 50 miles of your house.

4. Dry-up household water consumption

Did you know that water-related energy use consumes 19 percent of California's electricity, 30 percent of its natural gas, and 88 billion gallons of diesel fuel every year? To reduce your water consumption at home, turn off your water when it's not being used, take shorter showers, stop unseen leaks by reading your meter, install low-flow shower heads and aerators on your faucet, install and use water-efficient landscaping and irrigation methods (for example, plant drought tolerant plants and/or install permeable surfaces and drip irrigation systems), and use ENERGYSTAR appliances.

5. Unplug it

Did you know that appliances, chargers, home theater equipment, stereos, and televisions use electricity even when their power is off? Eliminating this "leaking" electricity could save you 6–26 percent on your average monthly electricity bill. Take a walking tour of your home, unplug seldom-used appliances, and install power strips so that the power to frequently used items can be easily turned off.

6. Change the lights

Replace any incandescent light bulbs that remain in your home with compact fluorescent lights (CFLs). Replacing one incandescent light bulb with a CFL can save $30 or more in electricity costs over the bulb's lifespan.

7. Set your thermostat for the season

Set your thermostat in winter to 68°F or less during the daytime, and consider turning off the heat entirely at night and use blankets to stay warm to save 5–20 percent of your space-heating costs. During the summer, set thermostats to 78° degrees or more to save 5–20 percent of your cooling costs. For an easy fix, purchase an inexpensive programmable thermostat that makes these changes for you.

8. Increase energy efficiency at home

Did you know that you can save up to 350 pounds of CO_2 and $150 per year at home by simply keeping air filters clean? To save more energy and energy costs, insulate your attic, walls and floor, and get double-paned windows. To determine more ways to increase energy efficiency take advantage of rebates available through Energy Upgrade San Mateo. When you are ready to purchase an appliance, ensure that you purchase an ENERGYSTAR appliance. Consider installing solar panels or a solar hot water heater. Did you know solar panels still produce near full capacity even on a foggy day?

9. Reduce your air travel

Air travel is among the most highly carbon intensive human activities. For those of us who frequently fly for work, family visits and vacations, air travel related carbon emissions can quickly escalate. Air travel can be single largest decision individual residents make that effect their emissions. All of the well intentioned emissions reductions produced by choosing a hybrid cars or making efficiency improvements to your home can be wiped out by a few flights. Certainly some flights are necessary and cannot be avoided, but the convenience and relative inexpensiveness of air travel, make quick trips to Vegas or Hawaii a bit too tempting. Because there is no carbon-light way to fly, the best option is to reduce the amount of flights we take. The simple decision to cut out a few less-than-necessary flights per year can substantially reduce one's carbon footprint. Consider taking a "staycation" (local vacation) for your next vacation, and consider video conferencing for your next meeting.

10. Consider a high efficiency gasoline, hybrid or plug-in electric car for your next car **purchase.**

In addition to reducing driving through carpooling, public transit, bikes and walking, we can greatly reduce the carbon footprint of our driving by getting a high fuel efficiency vehicle. There

are already many hybrids to choose from and 100 percent electric vehicles are being introduced by many manufacturers. An electric car charged on PG&E electricity has about a forth the carbon footprint of a comparable gasoline vehicle and can save you over $1,000 a year in fuel costs.

11. Eat less meat

Globally meat production contributes almost a fifth of total greenhouse gas emissions. This includes methane emissions from the animals themselves and deforestation to create new pastureland. Eating less meat is an easy way to reduce your carbon footprint. Try picking a day of the week to go meatless. Even eating chicken instead of beef or pork can greatly reduce your footprint. On a per calorie basis, chicken production results in less than five percent of the greenhouse gas emission of beef.

12. Stop unwanted services

Did you know that junk mail production in the U.S. consumes as much energy as 2.8 million cars? Stop your junk mail at www.directmail.com/junk_mail. Stop unwanted catalogs at www.catalogchoice.org.

13. Get your friends and families to reduce their carbon emissions

Consider starting a low carbon diet study group in your neighborhood and work to reduce carbon emissions with your neighbors. Check out the book *A Low Carbon Diet* by David Gershon. Join and contribute to organizations that are working on climate change.

Appendix C. Summary of Funding Sources

For implementation of the climate action plan, Pacifica must evaluate strategies for financing climate protection actions and provide adequate, reliable, and consistent long-term program funding. This appendix provides an overview of available funding sources to help determine appropriate potential program funding sources and funding levels to support existing and new programs outlined in this plan. Other funding sources may be available that are not listed here.

C.1 Federal Funding

American Reinvestment and Recovery Act (ARRA) Loan Program

Low-interest loans (with an interest rate of 1 percent) are available through the California Energy Commission for municipal energy saving projects. The maximum loan amount is $3 million per application and $20 million to $25 million is currently available. Loans must be repaid from energy cost savings within approximate 13 years simple payback. Eligible projects include improving lighting systems, replacing streetlights or traffic signals LEDs, installing automated energy management systems/controls and building insulation, energy generation including renewable and combined heat and power projects, heating and air conditioning modifications, and upgrading waste-water-treatment equipment. Swimming pools and golf courses are not eligible for funding under this program. All projects financed using this program must be completed and fully disbursed on or before March 31, 2012. Information about this program is available online at http://www.energy.ca.gov/efficiency/financing/index.html.

Federal Transportation Investment Generating Economic Recovery (TIGER) Grant

The Federal Transportation Investment Generating Economic Recovery (TIGER) grant program was created by the American Investment and Recovery Act (ARRA) of 2009. State Funding

California Solar Initiative (CSI)

The California Solar Initiative (CSI) is the solar rebate program for California consumers that are customers of the investor-owned utilities - Pacific Gas and Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E). Together with the rebate program for New Solar Homes and rebate programs offered through the dozens of publicly owned utilities in the state— the CSI program is a key component of the Go Solar California campaign for California.

A solar rebate program for customers in PG&E, SCE, and SDG&E territories, this program funds solar on existing homes, existing, or new commercial, agricultural, government and non-profit buildings. This program funds both solar photovoltaic's, as well as other solar thermal

generating technologies. This program is sometimes referred to as the CSI general market program.

- A solar hot-water rebate program for customers in PG&E, SCE, and SDG&E territories. This program funds solar hot water (solar thermal systems) on homes and businesses. This program is called the CSI-Thermal program.
- A solar rebate program for low-income residents that own their own single-family home and meet a variety of income and housing eligibility criteria. This program is called the Single-family Affordable Solar Homes (SASH) program.
- A solar rebate program for multifamily affordable housing. This program is called the Multifamily Affordable Solar Housing (MASH) program.
- A solar grant program to fund grants for research, development, demonstration, and deployment (RD&D) of solar technologies. This program is the CSI RD&D program.

The CSI offers solar customers different incentive levels based on the performance of their solar panels, including such factors as installation angle, tilt, and location rather than system capacity alone. This performance framework ensures that California is generating clean solar energy and rewarding systems that can provide maximum solar generation.

The CSI program has a total budget of $2.167 billion between 2007 and 2016 and a goal to install approximately 1,940 MW of new solar generation capacity. The CSI-Thermal portion of the program has a total budget of $250 million between 2010 and 2017, and a goal to install 200,000 new solar hot-water systems. The CSI program is funded by electric ratepayers and the CSI-Thermal portion of the program is funded by gas ratepayers. The CSI program is overseen by the California Public Utilities Commission and rebates are offered through the Program Administrators.

Single-family Affordable Solar Homes (SASH) Program provides solar incentives on qualifying affordable single-family housing. To qualify for a fully subsidized 1 kW system, homeowners must meet the legal definition of "low-income residential housing" in Public Utilities Code 2852. Eligibility is limited to owner-occupied households that received electric service from the investor-owned utilities (e.g., Pacific Gas & Electric) and whose household income is at or below 50 percent of the area median income (AMI). To qualify for a highly subsidized solar system is determined by household income less than 80 percent AMI, housing stock eligibility, Federal Income Tax liability, and eligibility for the California Alternative Rates for Energy (CARE) Program.

Multifamily Affordable Solar Housing (MASH) Program provides solar incentives on qualifying affordable housing multifamily dwellings. To qualify for MASH Track 1 or Track 2 incentives, a property must meet the definition of "low-income residential housing" per Public Utilities Code 2852 and have occupancy permit for at least two years prior to applying for incentives. More information about this and the SASH program can be found on the California Public Utilities Commission's website (http://www.cpuc.ca.gov/PUC/energy/Solar/).

Energy Conservation Assistance Account Program (ECAA)

Projects that are not eligible for funding under the ARRA Loan Program may be eligible for funding through the California Energy Commission's Energy Conservation Assistance Account Program (ECAA), which offers loans with three percent interest to finance energy-efficiency improvements. Information about this program is available online at http://www.energy.ca.gov/efficiency/financing/index.html.

C.1.1 Utility Rebate Programs

PG&E Residential Appliance Rebates

Pacific Gas and Electric Co. (PG&E) offers rebates to customers who purchase qualifying energy efficient appliances, including dishwashers, hot-water heaters, and room air conditioners. Rebates range from $30 to $75 for qualifying appliances. PG&E and American Water are also currently offering a combined rebate of up to $250 for installing high-efficiency clothes washers. More information on these programs is available at http://www.pge.com/myhome/saveenergymoney/rebates/appliance/

PG&E LED Streetlight Replacement Program

The City of Pacifica may be eligible for PG&E's LED streetlight replacement program which provides rebates to cities that replace existing streetlights with more energy efficient LED fixtures (up to $125 per fixture). More information on this program is available at http://www.pge.com/mybusiness/energysavingsrebates/rebatesincentives/ref/lighting/lightemittingdiodes/incentives/index.shtml

PG&E Commercial Appliance Rebates

PG&E offers rebates to business customers on hundreds of products including refrigeration units, lighting fixtures, heating systems, food service appliances, boilers and water heaters, and insulation. More information and a complete list of products eligible for rebates are available online at http://www.pge.com/mybusiness/energysavingsrebates/rebatesincentives/ref/index.shtml.

PG&E Home Energy Efficiency Improvements Rebates

PG&E offers rebates to customers who make energy efficiency improvements when remodeling their homes. Currently PG&E offers a rebate of up to $0.20 per square foot for cool roof installations and $0.15 per square foot of attic and wall installation installed. Additionally, PG&E has rebates for homeowners who upgrade their home's heating and cooling systems. Rebates are available for installing energy efficient furnaces (up to $300), air conditioning units (up to $50) and whole house fans (up to $100). Finally, PG&E will provide up to $400 in rebates to customers who test and seal their home's duct system. More information on this program is available at http://www.pge.com/myhome/saveenergymoney/rebates/remodeling/.

C.1.2 Non-Governmental Organizations

American Forests Global ReLeaf Grant Program

American Forests is a non-profit organization founded in 1875 that promotes forest conservation. American Forest's Global ReLeaf Program provides grants to fund tree-planting projects in urban and natural areas. More information is available online at http://www.americanforests.org/global_releaf/.

California ReLeaf Urban Forestry Grant Program

The California ReLeaf Urban Forestry grant program provides funding to assist nonprofit and community-based groups throughout California with urban forestry projects. The program is funded through a contract with the California Department of Forestry and Fire Protection (CAL FIRE). More information is available online at http://californiareleaf.org/ programs/grants.

Appendix D. Future Opportunities for Reductions

In this section, we identify policies and measures for future GHG emissions reductions. These actions were originally developed by the City of Pacifica Climate Action Plan Task Force.

D.1 Air Travel

Air travel is among the most highly carbon intensive human activities. While air travel represented 2.7 percent of total CO2 emissions in 2004, its reliance on fossil fuels and increasing demand will continue to drive growth of between 3 and 4 percent per year, including efficiency gains. On a per flight basis, air travel produces between 0.22 tonnes CO2 (short haul, i.e. SFO to LAX) and 4 tonnes CO2 (long haul, i.e. SFO to Sydney, Australia) per round trip flight. Given that the average annual CO2 emissions per American is about 23 tonnes, a single flight from SF to NY can represent 6 percent (1.4 tonnes CO2) of an individual's total annual carbon footprint. For those of us who frequently fly for work, family visits and vacations, air travel related carbon emissions can quickly escalate.

Goal: Reduce the amount of air travel

Air travel can be single largest decision individual residents make that effect their emissions. All of the well intentioned emissions reductions produced by choosing a hybrid cars or making efficiency improvements to your home can be wiped out by a few flights. Certainly some flights are necessary and cannot be avoided, but the convenience and relative inexpensiveness of air travel, make quick trips to Vegas or Hawaii a bit too tempting.

Because there is no carbon-light way to fly, the best option is to reduce the amount of flights we take. The simple decision to cut out a few less-than-necessary flights per year can substantially reduce one's carbon footprint. Here are a few alternatives:

- *Staycations:* the City of Pacifica should work with the chamber of commerce and local tourist industry to promote staycations. And promote idea of a bay area resident discount at local hotels as a way of promoting staycations.
- *Video conferencing:* the City of Pacifica should encourage residents and businesses to use services like WebEx, GoToMeeting, Acrobat, Skype and Google chat to conduct business meetings and visit with family and friends. While in person meetings will always have a place, video conferencing technology has become high quality and ubiquitous enough to provide an effective proxy.

Goal: Offset the GHG Impact of air travel

While reduction of air travel should always be the first choice, the City of Pacifica should also consider developing a meaningful and tangible local carbon offset project to help reduce the net emissions of Pacificans' air travel produced carbon footprint. The City of San Francisco, for example, has developed the San Francisco Carbon Fund (http://www.sfenvironment.org/our_programs/topics.html?ssi=6&ti=85) whose investment projects include:

- Dogpatch Biodiesel
- Urban Orchards
- Climate Passport program (kiosks) at SFO

D.2 Building and Energy

In addition to the reduction measures described in the Climate Action Plan, the City of Pacifica may also pursue the following actions as future measures.

Goal: Expand energy efficiency and renewable energy in the residential, commercial and public sectors.

Action: Provide a local renewable energy incentive.

This can be a local rebate similar to Burlingame's direct subsidy of $4.50/watt for solar power generated. Or this could be waiving permit fees or expediting permits for solar, wind or other on site renewable energy generation projects. Ways Pacifica could fund this could be a permit fee surcharge on all other permits, working with PG&E and CA PUC for an energy surcharge for electric and gas, or applying for Federal, State, County, PG&E, or private grants for renewable energy)

Action: Investigate opportunities for wind energy.

Pacifica's coastal location may be ideal for wind generation. New technological advances in wind technology have made wind generation very cost-effective. Consider studying the ridge tops and offshore sites for wind turbine locations. Consider public forums to gage public input on visual impacts of the wind turbines.

Action: Implement a property assessed clean energy (PACE) program currently known as Energy Upgrade California

Consider and ordinance similar to Berkeley's solar ordinance where the City floats bonds to pay for solar installations. Building owners pay back City through assessment on their tax bill. The goal is to have 70 percent coverage of un-shaded roofs by 2020.

California Assembly Bill 811 enables cities and counties to allow property owners to finance the up-front costs for solar and energy efficiency improvements through their property tax bill. This program would provide residents and small business owners with a method to install solar and/or energy-efficiency upgrades with a minimal upfront cost. This program can reduce one of the biggest barriers of solar and/or energy efficiency upgrades, as cited by homeowners and small business owners.

Residents and small businesses could install solar and other energy-efficiency upgrades with minimal upfront costs. Individual property owners would contract directly with qualified installers (e.g., solar installers) for energy and solar projects. The loans could finance permanent fixture energy efficiency, clean energy projects, solar panel installation, insulation, energy-efficient air conditioning or upgrades to lighting systems. Through the financing program, repayment is made through assessments on participating property owners' annual tax bills over a 20-year period. If the property is sold, the new owner takes over the assessment that continues on the property's tax bill.

Action: Enact a commercial energy efficiency policy

Develop a Commercial Energy Efficiency Policy to provide energy-efficiency technical assistance to the commercial sector and provide an Incentive and Recognition Program. Encourage commercial businesses applying for new or renewal of businesses licenses to complete a free PG&E energy-efficiency audit. Energy-efficiency audits and improvements can reduce energy usage by 30 percent to 40 percent. Encourage participation of businesses in the Bay Area Green Business Program and provide incentives for businesses to achieve Green Business Certification. Commercial developers and major corporations that have adopted specific energy efficiency initiatives do so because of the financial return and reduced operating costs that result from green buildings.

D.3 City Operations

In addition to the reduction measures described in the Climate Action Plan, the City of Pacifica may also pursue the following actions as future measures to reduce emissions from City operations:

1. Offer increased telecommuting options and vanpool/carpool incentives to eligible City Employees
2. Encourage all new and existing municipal buildings' to be net zero by 2020 and all existing buildings to adhere to the living building challenge
3. Renewable energy installation on municipal property. Complete a feasibility study on the installation of solar or other renewable energy projects at select City facilities (such as was done on the wastewater treatment plant) and install where feasible.
4. Environmentally preferred purchasing policy. Adopt a sustainable purchasing policy that emphasizes recycled materials and energy star equipment
5. Municipal energy audits and retrofits. Audit City facilities every 3 years for energy efficiency opportunities and implement improvements, and add a building management system to all municipal facilities
6. Reduce wastewater emissions by reducing water usage. This can be done by establishing financial incentives for conservation with tiered pricing. We can set a baseline water usage at a lower rate, but make heavy water users pay a much higher rate once they exceed the baseline.
7. Build graywater systems in new City building construction. Wastewater from sinks, dishwashers, and showers is captured and redirected toward landscaping or flushing toilets.
8. Encourage recycling in public spaces by including a recycling cage on all public waste bins by retrofitting public waste bins with recycling cages and all new bins have larger recycling and compost bins and smaller trash bins
9. Establish recycling and composting systems in each City building and recycling training for employees and maintenance staff.
10. Prohibit purchase of bottled water with City funds. Promote reusable water bottles, paper cups (where necessary) and regular tap water as a less expensive and smaller carbon footprint alternative, and conduct careful and regular effective regular water monitoring and inclusion of water filtration systems as needed
11. Install bike racks at City buildings, Maximize the planting of native trees and groundcover on City property to optimize the sequestration of carbon on the land while balancing building efficiency and energy needs, as identified on a case by case basis.
12. Prohibit high wattage space heaters
13. Provide bus line information- promote bus line info to staff provide brochures
14. Keep building thermostats at energy efficient setting.

Appendix E. Projected San Francisco Bay Area Climate Impacts

Historical records show that the sea level in San Francisco Bay has risen about 7 inches (18 cm) over the past 100 years. Scientists agree that the rate of sea-level rise is accelerating, but projections of future sea levels vary considerably. Present projections used by the state of California[38] are for 14 inches of sea level rise by 2050 (using 2000 as the baseline) and for between 40 and 55 inches by 2100, depending upon the emission scenario used. In 2009, the Bay Conservation and Development Commission (BCDC) released *Living With a Rising Bay*, an assessment that included the following[39]:

- Increased flooding risk for 270,000 Bay Area residents with a 55 inch rise
- Estimated $36 billion in at-risk property by 2050, and $62 billion by 2100
- Estimated 95 percent of tidal wetlands vulnerable to sea level rise, which may increase flooding and erosion

The Pacific Institute, with support from the California Energy Commission, California Department of Transportation, and the Ocean Protection Council, has produced inundation maps for the shores of San Francisco Bay that indicate which areas are vulnerable to 16-inch and 55-inch rises in sea level.[40]

According to a 2009 study[41] by the CEC, the Pacific Institute, and others, 110,000 people live in areas of San Mateo County that are vulnerable to a 100-year flood event with a 1.4 meter rise in sea level. The County infrastructure and facilities at risk from the same event include:

- $24 billion worth of buildings and contents, mostly along the Bay (replacement value);

[38] Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), 2010. State of California Sea-Level Rise Interim Guidance Document. October 2010.

[39] San Francisco Bay Conservation and Development Commission. 2009. (April) Draft Staff Report. Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline. Available at: http://www.bcdc.ca.gov/proposed_bay_plan/bp_1-08_cc_draft.pdf

[40] Maps available at http://www.pacinst.org/reports/sea_level_rise/hazmaps.html

[41] Heberger, Matthew, Heather Cooley, Pablo Herrera, Peter H. Gleick, and Eli Moore (2009). The Impacts of Sea Level Rise on the California Coast. PIER Research Report, CEC-500-2009-024-D, Sacramento, CA: California Energy Commission.

- 530 miles of roadways;
- 10 miles of railroads;
- San Francisco Airport (SFO), including the 31 MW United Cogen power plant located there;
- Wastewater treatment plants operated by the Cities of South San Francisco/San Bruno, City of Millbrae, City of San Mateo, South Bayside System Authority, Mid-Coastside Sewer Authority, and SFO (total treatment capacity of approximately 44 MGD);
- 78 EPA-regulated hazardous materials sites;
- 34 square miles of coastal wetlands.

The Pacific Ocean shoreline, from Daly City to the Santa Cruz County line, has a number of areas that will become increasingly vulnerable with sea level rise. This shore too is vulnerable to tidal and fluvial inundation. With just a 1-foot rise in sea level, areas that are considered to be in 100-year flood zones today are likely to experience such events every 10 years.[42] Salt water intrusion into local estuaries and coastal aquifers will impact water quality, transform ecosystems and reduce available fresh water for irrigation and other needs. But the shoreline will also bear the brunt of wave action and storm surges. For instance, the shore south of Pillar Point Harbor in the vicinity of El Grenada south past Miramar and into the town of Half Moon Bay is eroding rapidly. As a result, pedestrian access is restricted and Caltrans has armored the west side of Highway 1. Farther north in Moss Beach, a section of Ocean Boulevard was recently closed due to mass sliding of the bluff, initiated by coastal erosion at its base

Erosion along the northern coast of Pacifica has resulted in the loss of a huge amount of coastal bluffs, as much as several hundred feet in the last twenty years, including the loss of several homes and leading to the abandonment of several apartment buildings left hanging at the edge of Palmetto Avenue.

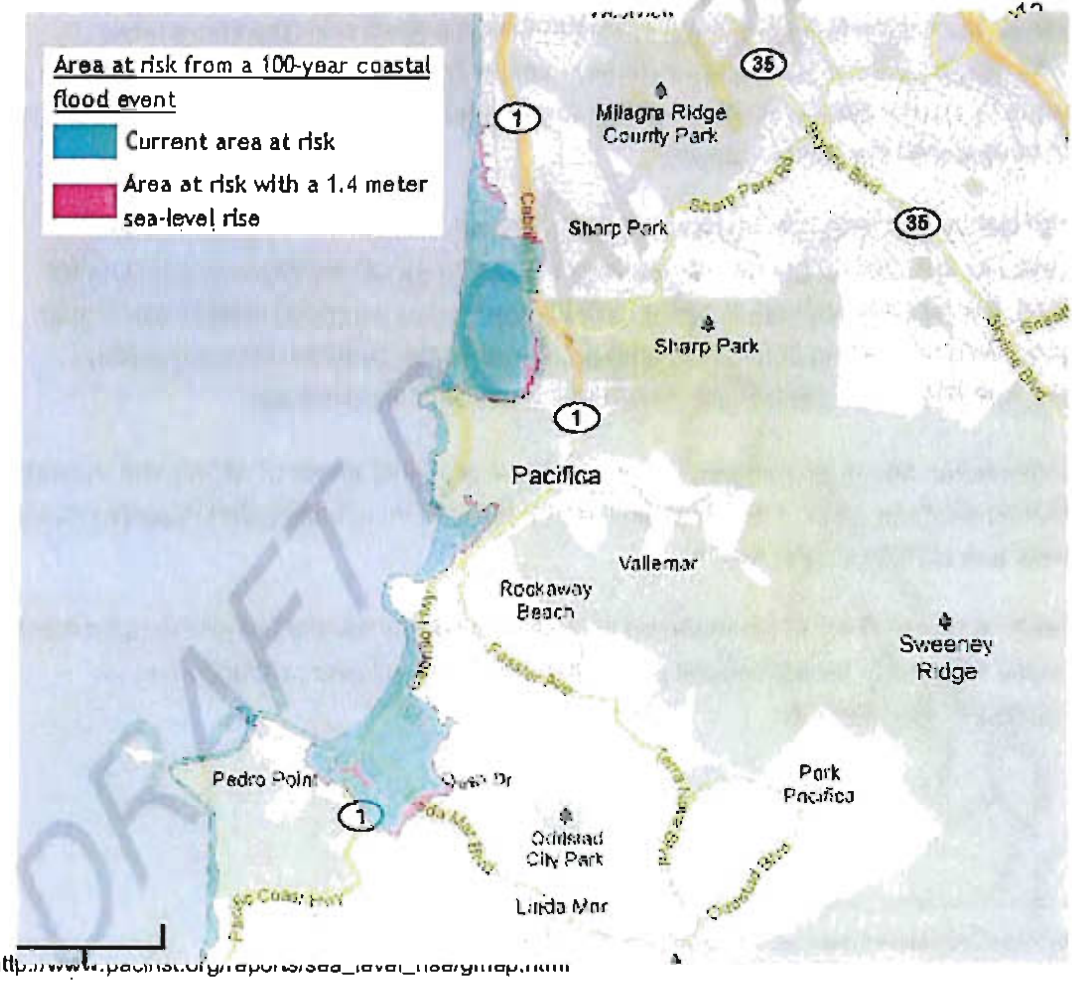
One example of a solution to problems facing coastal cities from coastal erosion and sea level rise is the Pacifica State Beach Managed Retreat, Beach and Estuary Restoration. Pacifica State Beach is one of the first beaches in California to utilize managed retreat as a method of shoreline protection in response to chronic coastal flooding and beach erosion. This award winning managed retreat project reduced flooding hazards by realigning oceanfront private property and infrastructure away from coastal erosion hotspots, and restored wetlands

[42] Heberger, Matthew, Heather Cooley, Pablo Herrera, Peter H. Gleick, and Eli Moore (2009). The Impacts of Sea Level Rise on the California Coast. PIER Research Report, CEC-500-2009-024-D, Sacramento, CA: California Energy Commission.

functioning on San Pedro Creek. The project involved over 10 regulatory and permitting agencies, funding from eight granting agencies and the active participation of eight environmental groups.

Coastal erosion at Linda Mar State Beach had threatened critical infrastructure and oceanfront property, while at the same time, flood hazards from nearby San Pedro Creek caused periodic flood damage to the City of Pacifica. Despite earlier stabilization activities, Pacifica continued to face three main shoreline management issues: flooding of homes and businesses; erosion of Pacifica/Linda Mar State Beach; and maintaining habitat for the steelhead trout in San Pedro Creek. Starting in 2001 the project focused on the restoration of the natural coastal and wetland processes to reduce the flooding and erosion hazards, as well as to improve habitat and enhance recreation

Sea Level Rise on the California Coast[43]



[43] http://www.pacinst.org/reports/sea_level_rise/gmap.html

The range of current sea level rise estimates presents very different scenarios to cities that must decide how to expend limited resources to protect critical land uses and infrastructure. As the shoreline migrates landward, habitats and flood hazard areas will also shift. Past development of residential, commercial, and public access infrastructure may limit the flexibility of set-backs or adjustments to the Bay shoreline.

E.1 Extreme Heat and Storm Events

California in general should expect overall hotter and drier conditions with a reduction in winter rain (and concurrent snow in the mountains), as well as increased average temperatures. There is a high likelihood that extreme weather events, including heat waves, wildfires, droughts, and floods will be among the earliest climate impacts experienced.[44] In San Mateo County, higher average sea levels means that storms will impact the Pacific coast and Bay shore more severely with higher storm surges, more extensive inland flooding, and increased erosion. If more frequent or severe natural disasters occur, more emergency and public health services will be needed to deal with the consequences.

Heat related illness and mortality are expected to increase. Though extreme heat events in coastal areas like San Mateo County are not expected to be as severe or as long-lasting as further inland, the resident population is not as well prepared or equipped to deal with higher temperatures. Air conditioning is far less common, for example. Outdoor workers, elderly populations, and infants are particularly vulnerable to extreme temperatures.

Higher temperatures and drier summer conditions produce higher levels of ozone and increase the potential for wildfires, both of which could lead to declines in air quality and negative impacts to respiratory and cardiovascular health.

Local agriculture is also likely to be impacted by extreme weather events, higher temperatures, and less water availability for agricultural production, resulting in lower production and a potential decline in food security.

[44] California Natural Resources Agency, 2009, California Climate Adaptation Strategy, http://www.climatechange.ca.gov/adaptation/

E.1.1 Adaptation Planning

E.2 Adaptation

The climate is changing rapidly. According to the World Meteorological Organization, in their news release "2000-2009, The Warmest Decade."[46]

> *The decade of the 2000s (2000–2009) was warmer than the decade spanning the 1990s (1990–1999), which in turn was warmer than the 1980s (1980–1989)... The 2000 – 2009 decade will be the warmest on record, with its average global surface temperature about 0.96 degree F above the 20th century average.* ***This will easily surpass the 1990s value of 0.65 degree F.***

Even if we stopped emitting GHGs tomorrow, the climate would still continue to change due to the length of the carbon cycle — the ability of the earth to absorb the excess carbon in the ocean and plants. Therefore it is noted briefly here that cities should take the lead in planning for adaptation to climate change. The Climate Action Plan Task Force was not commissioned to provide specific recommendations as to adaptation planning for climate change and this aspect of the plan will be developed by the City independent of the Climate Action Plan Task Force. The Climate Action Plan Task Force recommends that Adaptation Planning be incorporated into the General Plan and the Local Coastal Plan.

Effective adaptation planning and management entails dealing with uncertainty. It is a long-term process that should allow immediate action when necessary and adjust to changing conditions and new knowledge. Pacifica plans to initiate an inclusive planning process that ensures the resulting actions are feasible and widely accepted. Adaptation will likely be an ongoing process of planning, prioritization and specific project implementation.

Five important steps to effective adaptation planning are summarized below:

1. **Increase Public Awareness; Engage and Educate the Community**
   It is critical that the public understand the magnitude of the challenge and why action is needed. The planning process should be inclusive of all stakeholders. Local outreach campaigns are needed to promote awareness of the dangers of heat exposure and

[45] WMO 2010. 2000–2009, THE WARMEST DECADE
http://www.wmo.int/pages/mediacentre/press_releases/pr_869_en.html

recommend low-cost and low-GHG adaptation strategies. These efforts should leverage similar efforts undertaken at the regional, state, and federal levels;

2. **Assess Vulnerability**

Understanding vulnerability sea level rise and other climate change impacts is critical to developing adaptation effective strategies. A detailed vulnerability analysis should be performed to assess potential climate change impacts to infrastructure and natural systems. Future vulnerability of assets and infrastructure can then be assessed using conceptual models of shore response to sea level rise. Shore response models can be applied for one or more climate change scenarios and planning horizons, and a strategy for adapting can be developed with due consideration to priorities and time frames. Both short-term and long-term adaptation strategies should be identified. Level of risk can be categorized in terms of likelihood of damage within the forecasting period and the severity of the damages. This allows planners to prioritize their response to sea level rise. The vulnerability assessment can also provide a framework for agency and community education and participation, feed into other planning documents, and identify funding needs.

3. **Establish Goals, Criteria and Planning Principles**

Engage with stakeholders to establish planning priorities, decision criteria, and build community support for taking action. Rank physical and natural assets for preservation efforts. Where possible, look for situations where a mitigation action has adaptation co-benefits (e.g., planting trees to reduce urban heat islands while sequestering carbon and providing habitat).

4. **Develop Adaptation Plan**

Identify specific strategies, develop actions & cost estimates, and prioritize actions to increase local resilience of City infrastructure and critical assets, including natural systems like wetlands and urban forests. Look for synergies between natural processes and engineering solutions. There is a continuum of strategies available to manage sea level rise, ranging from coastal armoring (levees, seawalls, etc.) to elevated development to a managed retreat or abandonment of low-lying development. An adaptation plan should include a prioritized list of actions (e.g. projects), with a timeline, capital expenditure plan, and a framework for monitoring and adaptive management.

5. **Ongoing monitoring and adaptive management**

Reassess climate change vulnerabilities on a regular basis and modify actions accordingly. This includes monitoring the effectiveness of current policies, strategies and

actions, and keeping up with changing science, funding opportunities, and regulatory actions.

A menu of potential adaptation strategies and measures is provided in the table below.

Table 17. Adaptation Strategies and Measures

Climate Change Impacts	Sample Adaptation Measures
Sea level Rise Risks to existing facilities, natural systems, private property and public infrastructure;	▪ Educate and engage the community on the need for long-range planning; ▪ Partner or collaborate with other jurisdictions and agencies to increase awareness and build community support for action; ▪ Identify funding mechanisms and seek public-private partnerships where interests converge; ▪ Use natural backshore wave-buffering processes to reduce wave erosion and run-up on levees; ▪ Increase or maintain the buffering capacity of tidal wetlands to protect against storm surges and keep pace with sea-level rise; ▪ Move levees further inland to allow marshes and mudflats to naturally transgress landward; ▪ Protect and restore wetlands that provide vital habitat and carbon storage, and allow for landward migration of habitat over time; ▪ Modifications to low-lying wastewater treatment facilities. Consider opportunities for integrating wastewater treatments and wetlands; ▪ Avoid new development in areas at risk based on sea level projections; ▪ Coastal armoring with levees and seawalls to protect vital infrastructure from erosion, inundation and flooding;
Extreme Heat Events Risks to public health and infrastructure;	▪ Identify vulnerable communities and develop emergency preparedness plan; ▪ Establish cooling centers, especially for vulnerable populations; ▪ Reduce urban heat islands through use of cool roofs and other reflective surfaces, ▪ Targeted tree planting and new requirements for shading in new parking lots and other large paved areas; ▪ Reduce risk of wildfires through fuels reduction in the urban-wild land interface.
Regional Drought Risks to reliable water supply, and potential conflicts between urban and agriculture users	▪ Increase capacity for community water storage; ▪ Promote local water conservation; ▪ Make water conservation a top priority for agriculture in the region; ▪ Water reclamation and reuse projects;
Increased Flooding & Severe Weather Events	▪ Integrate local flood management plans with adaptation planning;

Climate Change Impacts	Sample Adaptation Measures
Risks to public health, private property, public infrastructure, and ecosystems	▪ Identify vulnerable communities and develop emergency preparedness plans; ▪ Establish local land use policies that decrease flood risk; avoid building in high-risk areas; ▪ Modifications to storm water system routing and storage; Develop storage areas for peak flows; ▪ Maximize use of bioswales and permeable surfaces in both greenscape and hardscape areas to improve aquifer recharge & mitigate flooding from stormwater;
Air Quality and Other Public Health Concerns	▪ Restrict use of fireplaces and open fires on high-risk days; ▪ Monitor potential disease vectors and develop public awareness;
Threats to Species, Ecosystems, and Ecosystem Services	▪ Design urban forest program to improve biodiversity, provide heat relief, and sequester carbon; ▪ Preserve wetlands, salt marshes, and other critical coastal habitats
Risks to local agriculture & food supply	▪ Promote conservation of local agricultural land; ▪ Support local farmers markets

1

Appendix F. Baseline GHG Inventory Documentation

Provided courtesy of the Pacifica Climate Committee. Original document titled "A Community-wide Greenhouse Gas Inventory for Pacifica, California for 2005." Updated June 2011.

F.1 Pacifica inventory emissions factors for electricity and natural gas

This table is adapted from the San Mateo County Community-wide GHG Inventory Template. We took all emissions factors directly from the California Air Resources Board, Local Government Operations Protocol for GHG Inventories.

Emission Source	GHG	Emission Factor	Emission Factor Source
PG&E Electricity	CO_2	489.16 lbs/MWh	Local Government Operations Protocol, Table G.6. See also the California Climate Action Registry Power/Utility Protocol Public Reports; http://www.climateregistry.org/CARROT/public/reports.aspx
	CH_4	0.03 lbs/MWh	Local Government Operations Protocol, Table G.7
	N_2O	0.011 lbs/MWh	Local Government Operations Protocol, Table G.7
Natural Gas	CO_2	53.06 kg/MMBtu	U.S. EPA, Inventory of Greenhouse Gas Emissions and Sinks: 1990-2005; see also Local Government Operations Protocol, Table G.1
	CH_4	5.0 g/MMBtu (residential & commercial sectors)	EPA Climate Leaders, Stationary Combustion Guidance (2007), Table A-1, based on U.S. EPA, Inventory of Greenhouse Gas Emissions and Sinks: 1990-2005 (2007),Annex 3.1; see also Local Government Operations Protocol, Table G.3
	N_2O	0.1 g/MMBtu	
Direct Access Electricity	CO_2	958.49 lbs/MWh	CO2 emissions factor calculated from total in-state and imported electricity emissions divided by total consumption in MWh. Emissions from California Air Resources Board, Greenhouse Gas Inventory, 1990-2004 (November 17, 2007 version), available at http://www.arb.ca.gov/cc/inventory/data/data.htm Consumption data from California Energy Commission, http://www.energy.ca.gov Factors for CH4 and N2O from Local Government Operations Protocol, Appendix G, Table G.7
	CH_4	0.03 lbs/MWh	
	N_2O	0.011 lbs/MWh	

F.2 Details of Transportation, Direct Access Energy, and Off-road emissions

F.2.1 Transportation

Emissions from transportation were calculated from vehicle miles traveled using methods and data from the San Mateo County Community-wide GHG Inventory Template. Vehicle miles traveled were first split into Gas and Diesel miles traveled based on the vehicle-miles-traveled mix for San Mateo County in the table below. Methane and Nitrous Oxide emissions were calculated directly by multiplying gas or diesel vehicle-miles-traveled by the appropriate emissions factors and then converting to carbon dioxide equivalents based on global warming potential (21 times for methane and 310 times for nitrous oxide). For carbon dioxide emissions vehicle-miles-traveled was divided by San Mateo County average fuel efficiencies to get gallons of gas and diesel used, and these were then multiplied by the appropriate CO2 emissions factor.

Emissions factors for calculating GHG emissions from vehicle miles traveled. This table is adapted from the San Mateo County Community-wide GHG Inventory Template. The original data source is the Bay Area Air Quality Management District, EMFAC 2007 model.

County	CH_4 Rates (grams/mile)		N_2O Rates (grams/mile)		VMT Mix		CO_2 Rates- (grams/gallon)		Fuel Efficiency (miles/gallon)	
	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel
San Mateo County	0.058	0.030	0.070	0.050	96.8%	3.2%	8,609	10,216	19.6	8.1

F.2.2 Direct Access Energy

The San Mateo community-wide GHG inventory template estimated Direct Access energy use for cities based on the San Mateo county-wide ratio of Direct Access energy use relative to non-residential energy use. In the county as a whole Direct Access electricity use was 20.89 percent of non-residential electricity use, and Direct Access natural gas use was 55.08 percent of non-residential natural gas use. The template applied these county-wide percentages to local area non-residential energy use to estimate local Direct Access use. For Pacifica, the template

approach produces an overestimate of Pacifica Direct Access energy use. Direct Access energy is mainly purchased by large industry, and Pacifica has little industry. PG&E data for energy use for Pacifica indicated no PG&E industrial electricity or natural gas use.

To account for the amount of industry in Pacifica relative to the county as a whole, the estimate of Direct Access energy use in Pacifica was scaled using the Pacifica share of manufacturing, wholesale and transport employment to total employment compared to the county-wide share. Ideally we would have done the scaling with just manufacturing employment as manufacturing is the sector most likely to use Direct Access energy, but data on just manufacturing jobs was not available. Jason Munkres (jasonm@abag.ca.gov, (510) 464-7929), Regional Planner at the Association of Bay Area Governments, provided us with estimated employment data for Pacifica for 2005 from their Projections 2009 report. In 2005 Pacifica had 350 jobs in manufacturing, wholesale and transport out of a total of 6,190 jobs (5.65 percent), while the county had 71,310 jobs in manufacturing, wholesale and transport out of a total of 337,350 jobs (21.14 percent). So Pacifica had about a quarter (5.65/21.14 = 26.75 percent) as much employment in manufacturing, wholesale and transport as the county as a whole and we scaled our estimate of Pacifica Direct Access energy use with this factor. Our estimate of Pacifica Direct Access electricity use was calculated as Pacifica commercial electricity use times 20.89 percent (county average Direct Access electricity use) times 26.75 percent (Pacifica manufacturing jobs scaling factor). Direct Access natural gas use was calculated in an analogous manner. Emissions from Direct Access electricity were calculated based an average emissions factor for Direct Access electricity in California (See Appendix A). Emissions from Direct Access natural gas were calculated using the same emissions factor as PG&E natural gas (See Appendix A).

F.2.3 Off-road equipment

Emissions from mobile off-road sources were estimated based on shares of countywide emissions. We had to use emission data for 2007, as data for 2005 was not available. The San Mateo County community scale inventory template provided total county emissions from lawn and garden equipment of 14,182 metric tonnes CO2e and Construction, Industrial, and Light Commercial Equipment of 255,468 metric tonnes CO2e. The original data source was Table Q of the Bay Area Air Quality Management District report titled "Source Inventory of Bay Area Greenhouse Gas Emissions." Pacifica's share of county-wide lawn and garden equipment emissions was estimated based on Pacifica's share of households in the county, and Pacifica's share of Construction, Industrial, and Light Commercial Equipment emissions was based on Pacifica's share of employment in the county. Jason Munkres at the Association of Bay Area Governments provided use with number of households and estimated employment data for Pacifica and San Mateo County for 2005 from their Projections 2009 report. In 2005 Pacifica

had a total of 14,190 households and the county had a total of 260,070 households. In 2005 Pacifica had a total of 6190 jobs and the county had a total of 337,350 jobs.

F.3 Biography for Carlos Davidson

Carlos Davidson is a Professor and Director of the Environmental Studies Program at San Francisco State University where he teaches courses on a variety of environmental topics including sustainability and climate change. He is co-author of a greenhouse gas inventory report for the San Francisco State University campus and is a member of the university's sustainability committee. He has a Ph.D. in ecology from the University of California, Davis, and a masters degree in economics from U.C. Berkeley.

F.4 Membership of the Pacifica Climate Committee

Tim Cowan
Carlos Davidson
Barbara Hubler
Cynthia Kaufman
Mary Keitelman
Celeste Langille
Dinah Verby

Exhibit D

Comment 1

Claycomb, Elizabeth

From: Bob [hutch@coastside.net]
Sent: Wednesday, July 11, 2012 7:05 PM
To: Claycomb, Elizabeth
Subject: DCAP Comments or Questions

HI Elizabeth, I just read this paragraph.

"The city of Pacifica will develop an ordinance requiring all residential and commercial properties that are undergoing title transfers to meet minimum energy efficiency and water efficiency standards. The ordinance could be phased in after 12 to 18 months of voluntary education and promotion to local residents. The ordinance could be modeled after Berkeley's RECO and CECO ordinances that require title-transfer properties to comply with energy and water efficiency measures, such as installing ceiling insulation, low-flow toilets and showerheads, and so forth. The city of Berkeley's measure caps total costs for residential energy upgrades under the ordinance at three-fourths of 1 percent of the residence's total sale price."

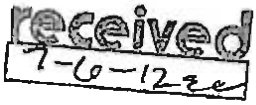
I hope they are not considering ANY taxes on buying and selling a home here. People can not afford taxes as they are. It will drive buyers and potential builders away from Pacifica.

Thank You.

Bob Hutchinson
Sharp Park

Comment 2

Claycomb, Elizabeth



From: Kim Springer [kspringer@smcgov.org]
Sent: Friday, July 06, 2012 8:42 AM
To: Claycomb, Elizabeth
Subject: Re: Draft Climate Action Plan is Now Available on The City of Pacifica Website in two locations

Hi Lizzy,

I read through the whole document, not word for word, but pretty much all of it. I think it's the first CAP that has a tone that enticed me to keep reading. There is something about the plainness of the language. It seems to really speak to the reader. In fact, I'm going to go back to the template to get a sense of how much Pacifica changed the language, or if the template reads similarly.

Anyway, congrats on all the hard work getting to this draft. It looks really good to me.

I'm going to forward it to the BAAQMD. We've been having a hard time getting them to set a time to meet to wrap up the grant we did with them. So this will inspire that effort.

Thanks,

Kim

Save Paper. Think Before You Print.

>>> <claycombe@ci.pacifica.ca.us> 7/5/2012 6:48 PM >>>
http://www.cityofpacifica.org/government/city_council/city_council_notices/default.asp

http://www.cityofpacifica.org/government/committees/climate_action_plan_task_force/default.asp

The City Council is holding a Study Session on August 1, 2012 at City Council Chambers between the hours of 6:00PM and 8:00PM to discuss the Draft Climate Action Plan, Drafted by the Climate Action Plan Task Force with assistance from the Silicon Valley Joint Venture Public Sector Climate Committee CAP Workgroup and KEMA Inc.

The links above will take you to the City Council Notice Page and the Climate Action Plan Task Force Page; the latter has a bit more detail regarding the process associated with drafting this plan.

Please note, the Study Session will also be detailed on the City Website Calendar, as soon as an agenda is available. Should you have any questions or concerns, please contact me via email or by phone (contact information is below).

Lizzy

Elizabeth Claycomb
Management Analyst
Planning and Economic
Development Department
City of Pacifica
650-738-7361 phone
650-359-5807 fax
claycombe@ci.pacifica.ca.us
www.cityofpacifica.org

Comment 3

Carlos Davidson and Celeste Langille comments on CAP. July 19, 2012

Piii Index is off by a few pages for sections 4.0 and all sections going forward.

P5 background says emissions reduction goals are 50% below 1990 by 2050. To be consistent with CA state policy and our CAP goals it should say instead 80% below 1990 levels by 2050

P7 L27 "a its" should be "a"

p11 L9 "developing consistent" should be "developing climate action plans consistent"

p12 L28 "citizen" instead of "citizens"

p16 numbers in left column should line up – that is be right justified.

P16 top table. Please remove the asterisk and footnote about the total not matching the sum of the categories due to rounding. This is the Pacifica Climate Committee Inventory so should not be changed. More importantly the note is awkward – many table totals have slight differences from categories due to rounding or not displayed decimal places – but generally do not have a note. The difference is 183,090 versus 183,089.

P20 blank line between lines 3 and 4. Same on page 23. I think there are a number of other similar blank lines on other pages.

P F-3 L21 and L22 Original inventory text said "See Appendix A" but now Appendix A is something else. Instead this could be changed to read "See Section F.1" Section F.1 is where the original inventory Appendix A material is in the CAP.

P40 Line 8 should read "reduction below 2005" instead of "reduction in 2005"

P47 Line 16 "affect" should be "effect" or use wording in previous draft CAP

P48 Lines 1-2, poorly written sentence in last CAP version made worse by breaking up sentence and starting with "Then,..."

also comment on P5, Lines 6-7, re when to update global atmospheric GHG concentration numbers now or later as data reference is dated July 2011.

Comment 4

Claycomb, Elizabeth

From: Bart [wavetool@earthlink.net]
Sent: Sunday, July 15, 2012 8:09 PM
To: Claycomb, Elizabeth
Subject: Climate Action Plan (Draft)

Hi Ms. Claycomb,

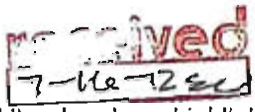
Just downloaded the July 5th Draft Climate Action Plan for Pacifica. Will there be a general public meeting on this issue? Also, will residents have input on this report given the assumptions made in the Draft Report before the Final Report?

Regards,
Bart Willoughby
415.238.8837 Cell

Comment 5

Claycomb, Elizabeth

From: Jim wagner [wags903@msn.com]
Sent: Monday, July 16, 2012 11:38 AM
To: Claycomb, Elizabeth; White, George
Subject: climate action



how much you charging for that riveting read? i'll never understand it unless I can highlight it. doesn't work on the computer!

Jim Wagner
DRE#00818721/NMLS#313878

EXHIBIT D

Claycomb, Elizabeth

received
7-27-12

Last comment received

From:	rerpac@aol.com
Sent:	Friday, July 27, 2012 7:20 AM
To:	Claycomb, Elizabeth; O'Connell, Kathy
Cc:	barietta@hotmail.com; barietta2006@yahoo.com
Subject:	Comments on City of Pacifica Draft Climate Action Plan (DCAP)
Attachments:	DraftCAP1Aug12-RER.doc

Good Morning to All

Elizabeth Claycomb:
My comments are attached for your information and action for purposes of supporting the 1 August 2012 City Council Study Session of the DCAP as a City Council appointed member of the Climate Action Plan Task Force (CAPTF) and member of the public now that the CAPTF has sunset at the start of this calendar year..

Kathy O'Connell:
Could you please distribute my comments to City Council members so they may have some time to consider them prior to the City Council Study Session on 1 August 2012.

By Cc: Barbara Arietta:
Attachment is provided to you as a courtesy because you chair the Green Building Task Force which may potentially become involved in certain aspects and because I believe you attended more Climate Action Plan Task Force meetings than any other member of the public.
Please consider attending the 1 August 2012 City Council Study Session in Council Chambers from 6-8 p.m., for it should be interesting.

I look forward to participating at the Study Session and hope my comments and those of others will be helpful. If the Study Session causes me to have further comments I will either voice them at the Study Session or submit them via e-mail after the Study Session (hopefully on August 1st).

Thank You and Regards,

Ray Ramos, P.E.
Resident of Pacifica

Comments on Draft Climate Action Plan (DCAP) released for public comment on 5 July 2012 for consideration at the 1 August City Council Study Session.

First, I want to thank the City Council for providing this opportunity to comment on the DCAP and for being appointed a member of the Council's Climate Action Plan Task Force that sunset at end of 2011.

I will provide some specific comments followed by some general comments for your consideration.

Regards,

Ray Ramos, P.E.

Here are my specific comments on the Draft Climate Action Plan:

Comment 1:

4.1.2. Goal: Expand energy efficiency and renewable energy in the residential, commercial and public sectors Page 34 starting on line 18 and continuing on Page 35 line 1 through 14:

"Encouraging or mandating retrofits of existing building has proven challenging for many cities due to significant market barriers. Often, building owners lack the incentives to upgrade inefficient equipment, especially in the case of a rental property where the benefit of the upgrade accrues to the renter who pays the utility bills. Nearby jurisdictions – San Francisco and Berkeley – have claimed considerable success implementing residential and commercial energy conservation ordinances (RECO [residential energy conservation ordinance] and CECO [commercial energy conservation ordinance]) to continually improve energy efficiency in the existing residential building stock."

"City of Pacifica will develop a City ordinance requiring all residential and commercial properties undergoing transfer of title to meet minimum energy efficiency and water efficiency standards. The ordinance could be phased in after 12 to 18 months of voluntary education and promotion. The ordinance could be modeled after the RECO and CECO ordinances in Berkeley that require properties being transferred comply with energy and water efficiency measures, such as ceiling insulation, low flow toilets and showerheads, etc. The City Berkeley measure caps total costs for a residential energy upgrades under the ordinance at three fourths of one percent of total sale prices of the residence."

Comments/Recommendations on Item 1: Developing an ordinance undergoing transfer of title that require all residential and commercial to be upgraded to meeting minimum energy efficiency and water efficiency standards could/would pose many complications as far as expense, time, effort and questions as to who will determine when and if minimum standards are met prior to enabling transfer of title. Perhaps a

new ordinance isn't needed because the Building Ordinance that became effective 5 July 2011 could be evaluated by the Green Building Task Force that is scheduled to review the ordinance commencing on July 12, 2012 as part of its mandated review to determine if changes should be recommended for consideration by the Pacifica City Council.

When this language was first proposed to the CAPTF for requiring all properties at time of a change in ownership there was voiced serious concerns as to the potential economic impacts, how such a requirement would complicate title transfers during more normal point of sale of a property and more specifically as how it would impact inheritance transfers, corporate ownership changes, commercial tenant upgrades projects, and public property to include third party lease/rental upgrades. Further, some members felt encouragement/voluntary community efforts are preferred to placing mandatory requirements on Pacifica community members that could be costly; however, a voting majority of the CAPTF placed this language into the draft CAP in the belief it would quicken upgrades that would reduce GHG emissions.

The existing draft CAP wording indicates: "Nearby jurisdictions – San Francisco and Berkeley – have claimed considerable success implementing residential and commercial energy conservation ordinances (RECO and CECO) to continually improve energy efficiency in the existing residential building stock." This draft CAP wording caused some concerns because it only mentioned improvement in residential building stock and didn't indicate any improvement in either the commercial or public sectors, which were included in the 4.1.2 heading.

Here are some salient points about the San Francisco and Berkeley Residential Energy Conservation Ordinance (RECO) and Commercial Energy Conservation Ordinance (CECO) and Point of Sales [please note some transfers of title and equity/ownership are not a point of sale] that might be worth City Council consideration:

- San Francisco, per the San Francisco Planning & Urban Research Association (SPUR), once had a CECO parallel to its RECO that required commercial buildings to meet energy efficiency standards when they were sold or transferred. The CECO was passed in 1989, but was repealed in 1996 because it was unpopular and problematic to enforce.

- The City of Berkeley, per SPUR, which has a commercial building stock far less diverse than San Francisco's, has a CECO that has been in place since 1993. Berkeley's CECO

applies at the time of sale of commercial property, and also is triggered by major renovations that either increase conditioned area by more than 10 percent or cost more than $50,000. It requires an energy audit to determine the applicability, cost and benefits of various energy conservation improvements related to a building's HVAC, furnaces, boiler, lighting and building envelope. Then the seller must implement upgrades with a cost ceiling of 1 percent of the sale price or assessed value, not to exceed $150,000. Exemptions are available for newer construction or low energy users.

- SPUR has indicated to San Francisco that it could model a reinstated CECO after Berkeley's ordinance, requiring an energy audit and imposing a cost ceiling and to align incentives, the compliance incentive could be placed on the buyer rather than the seller, or cost-sharing arrangement could be worked out. Another alternative is to tailor energy requirements to some of the standards that now apply to new building through San Francisco's Green Buildings Ordinance, LEED and GreenPoint Rated. This would be analogous to the City of Pacifica Green Building Ordinance.

- There are public costs to administer a CECO, which are usually based on some assumptions, such as # square feet of commercial space sold annually; a building's upgrade to a standard such as LEED-EB savings of 20 percent per square foot on energy and other utility expenses; and life cycle of energy efficiency improvements is 10 years. SPUR provided the following for San Francisco to consider for a reinstatement of a CECO: "We estimate the cost to DBI to implement a new CECO law at $200,000." The City of Pacifica costs would need to be evaluated.

- CECO and RECO cost for the cities are relatively inexpensive compared to the private costs of implementation. But while the upfront costs may be high for owners, investments in building performance typically result in savings. SPUR estimated for San Francisco CECO, if reinstated, the government cost to reduce one ton of carbon per SPUR through this program is about $1. The City of Pacifica costs would need to be evaluated.

- The Berkeley CECO is Chapter 19.72 of the City of Berkeley Municipal Code. First Section 19.72.020 defines "Commercial building" as any privately owned building except those residential buildings, or residential portions of commercial buildings, that are subject to

the energy conservation requirements of the Residential Energy Conservation Ordinance (Berkeley Municipal Code, Chapter 19.16).

- Section 19.72.050: The maximum total cost of the energy conservation measures required by this chapter to be installed upon sale of a commercial building is the lesser of one percent of the consideration given for the property, or one percent of the assessed value prior to sale, or one hundred fifty thousand dollars. Upon subsequent sales of such building, any remaining energy conservation measures shall be installed subject to the expenditure limit provided in this section for each such sale.

- Section 19.72.060 basically is the same but applies to major renovations. A major renovation is defined as any repair, addition or other construction to a commercial building where the sum of the total costs as reflected in the building permits for such work exceeds fifty thousand dollars, or where the work to be undertaken on the commercial building increases the total square footage of space of the building, served by heating or cooling equipment, as reflected on the County Assessor's records, by more than ten percent. Further, a "Sale" is defined as the conveyance of title to real property by one or more persons as a result of a sale or exchange, resulting in the execution of a real property sales contract as defined in Section 2985 of the California Civil Code as well as any change of ownership described in subdivisions (c) and (h) of Section 61 and subdivision (c) of Section 64 of the California Revenue and Taxation Code.

- Under Section 19.72.080 there is an exemption for financial hardship where: "The City Manager may exempt, on a case by case basis, a commercial building from the requirements of this chapter if the building owner has demonstrated that compliance with this chapter would cause him or her financial hardship as the term is defined in Section 19.72.020 of this chapter. The building owner shall bear the burden of submitting documentation of this financial hardship. The existing Pacifica Green Building Ordinance already has hardship provisions.

- San Francisco's RECO was established in 1989. The RECO requires property owners to conduct an energy inspection and install certain energy and water conservation features before selling their home. To meet these requirements, property owners may spend up to one (1) percent of the purchase price, or one (1) percent of the assessed value, whichever is greater. It appears there is a cost cap of $1,300 and in San Francisco SPUR

assumes every turnover would require a $1,300 cap by the owner or buyer. RECO applies only to homes built before 1978. The onus to meet RECO requirements may be transferred to the buyer if compliance will be certified within 180 days.

- Going to Berkeley answers some of the questions that were brought up during Pacifica CAPTF public meetings but not answered. Section 19.16.040 defines "Sale or exchange" as the transfer of title pursuant to any agreement to sell or exchange. This does not include transfer of title pursuant to inheritance, involuntary transfer of title resulting from default on an obligation secured by real property, change of title pursuant to marriage or divorce, condemnation, or any other involuntary change of title effected by operation of law. Any agreement that transfers ownership before the effective date of this ordinance. Please note that this definition still leaves open some questions as to what would be required if there are corporate ownership change, such as share exchanges.

- If San Francisco caps at $1,300, what does Berkeley do in regard to maximum, or capped expenditures to comply and who in Berkeley determines compliance for Berkeley? Section 19.16.060 is entitled Maximum required expenditure and states:
  A. The maximum required expenditure to bring a structure into compliance with this section shall be:
     1. In the case of sale or exchange:
        a. Three-quarters of one percent of the final sale price for a structure not containing more than two units, or
        b. Fifty cents per square foot in a structure containing three units or more.
     2. In the case of renovation of fifty thousand dollars or more:
        a. One percent of renovation costs.

- The City Manager of Berkeley or his or her designee is assigned to administer RECO, is defined as the "Administrator" and is responsible to inspect and find as to issues of compliance and issue a Certificate of compliance if the standards prescribed in Section 19.16.050 were met.

Comments on Draft Climate Action Plan (DCAP) released for public comment on 5 July 2012 by Ray Ramos, Pacifica resident and member of the City of Pacifica City Council appointed Climate Action Plan Task Force

- The City of Berkeley Administer or his or her designee shall also be responsible for notification of noncompliance under Section 19.16.100. In cases of sale or exchange, a seller has sixty days from the time of notification of noncompliance to bring the non-complying residential structure or unit into compliance with this chapter. Any person violating any provision of failing to comply with any of the requirements of this chapter shall be deemed guilty of an infraction as set forth in the Municipal Code. What would this mean for a member of the Pacifica community?

Comment 2:

4.2.1 Goal: Encourage Development that Supports Pedestrians, Bicyclists, and Transit Users and Reduces Driving starting at Page 41. Comment is specific to Table 6 on Page 42 Smart growth development measure that calls for the establishment of a smart growth policy that prioritizes infill, high density, transportation – oriented and mixed use development and rewarding smart growth projects located less than ¼ miles from transit or ½ mile from shopping or jobs.

"Smart Growth" can mean different things to different people. I don't see a definition provided in this DCAP and would recommend the Council consider using the definition provided in the Green Building Ordinance [Section 3.y. "Smart Growth" means development that revitalizes central cities and older suburbs, supports and enhances public transit and promotes walking and bicycling."].

I would recommend that further evaluation be given to the rationale behind the ¼ and ½ mile distances from transit and shopping or jobs, respectively. Pacifica transit is for most part by SamTrans bus service, does ¼ mile apply to a route line or a bus stop location? Does the ½ mile apply to any shopping location or place that has employees?

Comment 3:

5.6 GHG Reduction Strategy Management Page 63 lines 11-17 state: "Hire a Sustainability Coordinator to be the person responsible for implementing this climate action plan. If city funds are unavailable to fill this position, the city may elect to create the position as unfunded/unfilled and to use an existing staff member or members to take on the responsibilities of this role.

Comments on Draft Climate Action Plan (DCAP) released for public comment on 5 July 2012 by Ray Ramos, Pacifica resident and member of the City of Pacifica City Council appointed Climate Action Plan Task Force

Whether a single staff person or multiple staff, the cumulative time devoted to climate-action-plan-related business must amount to at least one half-time person. When city funding permits, the full-time position of Sustainability Coordinator will be filled."

The functions performed by the Sustainability Coordinator will be essential to the administration and management of the implementation of the Climate Action Plan, particularly those indentified in **Section 6. Monitoring and Improvement** presented on page 64 of the DCAP – <u>especially in regard to tracking</u>.

Here are some general comments related to the evolution of this DCAP:

Comment 4

It should be noted that the Draft Climate Action Plan (DCAP) released on 5 July 2012 is the first time it became available to Climate Action Plan Task Force (CAPTF) members since the last meeting of the Task Force in October 2011. The DCAP is focused on CHG emissions reduction, but climate adaptation planning for the impacts of Climate Change that can be expected regardless of CHG emissions reduction efforts; hence, I would recommend the City Council provide direction as to how it wants to develop a Climate Adaptation Plan. Some CAPs include Climate Adaptation Planning and some communities have separate Climate Adaption Plans from their CAPs (I recommend that both – if separate - should be included in or referenced to in your General Plan. You might want to look at what the City of Santa Cruz did in regard to their separate Action and Adaptation Plans since Adaptation referred to in the DCAP and not included therein.

Comment 5

It should be noted that Chapter 2 to the DCAP that was provided courtesy of the Pacifica Climate Committee (a private citizens group not appointed by the City Council) was not reviewed by the CAPTF prior to it being incorporated into the DCAP. It was an update of a community inventory that was represented by City of Pacifica liaison staff to the CAPTF as having been approved by the City Council for use as the City's community Inventory. Many communities in our area had their community inventory prepared by the International Council for Local Environmental Initiatives (ICLEI), but the City of Pacifica didn't. The ICLEI did do an inventory for the city operations that is available on the City website. One of the issues that necessitated the Chapter 2 updated community inventory was the decision to not include air travel after some CAPTF discussion and KEMA's (C/CAG contractor) recommendation that air travel not be included the community inventory. I supported the deletion of air travel, in part, because business travel customarily would be counted as a credited GHG reduction by the employer for a location that may not in the City of Pacifica. Further, tracking air travel reductions might be difficult for the City of Pacifica if

a target goal were established in the DCAP. The City certainly could take credit for GHG reductions for air travel not taken by those travelling on City of Pacifica business and for business travel by those employed or self-employed people and businesses located within the City of Pacifica. Air travel was also contentious due to its large percentage (about 25%) of the total GHG City of Pacifica community emissions in the original inventory prepared by the Pacifica Climate Committee dated June 2009. Further, air travel is not included in most other cities community inventories that I have reviewed. Air travel has been included in some inventories for businesses, agencies and governmental entities that generally control budgetary travel within their respective organizations under programs related to sustainability, environmental stewardship and/or simply expense cutting to maintain financial sustainability.

Comment 6

A reader of this DCAP might notice is that there are not estimated costs ($) to achieve indicated target GHG emissions reduction measures. Some other cities (e.g. Burlingame) in their CAPs include estimated financial implications/costs for actions/measures being planned. The City of Pacifica may want to develop some costs linked to planned measures to enable it to monitor and control its operating expenses.

Comment 7

In your notice regarding the 1 August 2012 City Council Study Session on the DCAP it was indicated that comments would be accepted through 1 August 2012 and should be sent to Elizabeth Claycomb. In that the CAPTF was City Council appointed I feel comfortable in also sending my comments to and City Council members so they may have some time to study them prior to the Study Session. Again I want to thank the City Council for appointing me to the CAPTF. I hope my comments and those from others are useful to the Council. I am planning to be present at the Study Session should you have questions and perhaps the Study Session will stimulate other comments that I can share.

This concludes my comments.

Regards,

Ray Ramos, P.E.
Resident In City of Pacifica