



LOCAL ACTION PLAN FOR CLIMATE PROTECTION

PREPARED BY THE CITY OF ALAMEDA
CLIMATE PROTECTION TASK FORCE AND THE
PLANNING AND BUILDING DEPARTMENT

As Part of the Cities for Climate Protection Campaign

Adopted on _____



City of Alameda Planning and Building Department
2263 Santa Clara Avenue, Room 190, Alameda, CA 94501

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Message from the Mayor

Dear Residents and Interested Community Members:

It is impossible to overstate the importance of global warming. No other issue threatens our planet with such far-reaching impacts, and no other issue is so clearly a worldwide problem. At the same time, many of the most promising solutions to global warming are local initiatives that we can control.

The City of Alameda has established a goal of reducing greenhouse gas emissions to 25% below 2005 levels by 2020. Achieving this goal will require action by government, businesses, and individuals. We know what causes global warming, and the steps to combat it are clear: reduce the use of fossil fuels. Reducing greenhouse gas emissions doesn't have to be difficult. In almost every case, it's good for the family budget and for the local economy.

We encourage you to join us in taking action on both a personal and a policy level. We will continue to examine local government activities to identify areas where we can reduce emissions from City operations. Please take an equally serious look at your own actions and search for ways to reduce emissions from your own activities. Every reduction matters, no matter how small.

Thank you for your interest in this vital issue.

Beverly J. Johnson
Mayor
City of Alameda

Acknowledgements

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Message from the Climate Protection Task Force

Dear Honorable Members of the City Council:

The City of Alameda is recognized nationally as having the lowest greenhouse gas emission rate per capita in Alameda County. Additionally, a large percentage of the energy utilized within the city is from carbon-free sources. Despite these significant achievements, there is still more that can be accomplished.

As members of the City of Alameda's Climate Protection Task Force, appointed by the Council to assist in the development of this Local Action Plan for Climate Protection, we recommend that the City Council pledge to further reduce its greenhouse gas emissions by at least an additional 25 percent by the year 2020.

In order to achieve this goal, we have developed a number of initiatives that are critical to the success of the Plan and the proposed reduction goal. We consider the following five initiatives to be the most critical of those listed in the Plan, and of the most immediate priority:

- 1. Adopt "Zero Waste Strategy" Programs and Ordinances.*
- 2. Develop a multi-faceted community outreach program to increase public awareness and participation in greenhouse gas reductions.*
- 3. Amend the Alameda Municipal Code to include sustainable design and green building standards for all new, substantially expanded, and remodeled buildings.*
- 4. Encourage the Alameda Public Utilities Board to require that Alameda Power & Telecom maintain and expand its source mix to 100 % carbon-free energy.*
- 5. Develop and fund alternative transportation strategies in the City's budget.*

It is absolutely critical that the City Council, its staff, local businesses, industries, institutions and the citizens of Alameda actively dedicate themselves to participating in and supporting these endeavors.

Sincerely,

City of Alameda's Climate Protection Task Force

I. Executive Summary

Climate Change and the “Greenhouse Effect”

The issue of climate change is frequently discussed on a national level and is a topic of worldwide news, school classrooms, and even casual conversation. The discussion of climate change is often framed by the phenomenon of what is commonly referred to as the “greenhouse effect,” which is the balance of naturally occurring gases that are dispersed in the atmosphere that determine the earth’s climate by trapping solar heat. The result of this effect is often referred to as global warming or global climate change. While some of the greenhouse effect is natural and necessary, because greenhouse gases play a vital role in maintaining the necessary conditions for life on earth, most scientists agree that human activities such as fuel consumption are disrupting the earth’s climate by intensifying the greenhouse effect.

The world’s population is releasing greenhouse gases faster than the earth’s natural systems can absorb them.¹ The release of gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), creates a blanket around the earth that allows light to pass through but traps heat, preventing its escape into space and creating the greenhouse effect. These gases are released as by-products of fossil fuel combustion, waste disposal, energy use, physical changes to the land, and other human activities. The Intergovernmental Panel on Climate Change (IPCC) warns that most of the warming observed over the last 50 years is attributable to human activities.

Locally, in Alameda and the surrounding San Francisco Bay Area, the forecasted changes in the climate could have the following impacts:

- Rising sea levels that threaten coastal infrastructure, ecosystems, and water supplies, including Alameda’s west side and its lagoon systems
- Warmer weather, resulting in longer dry spells and a decrease in Sierra snow pack that would affect fresh water availability
- Wetter weather, with an increase in annual rainfall of 20 to 30%, resulting in more serious storm events
- An increase in insect-borne diseases, such as West Nile virus, and other public health issues, such as increased rates of asthma and other pulmonary diseases

Local Actions Can Have a Significant Impact

The good news is that the subject of climate change is receiving attention at many levels, including the local level, resulting in action by local leadership. It is important to note that despite their relatively small size, cities and counties have the ability to

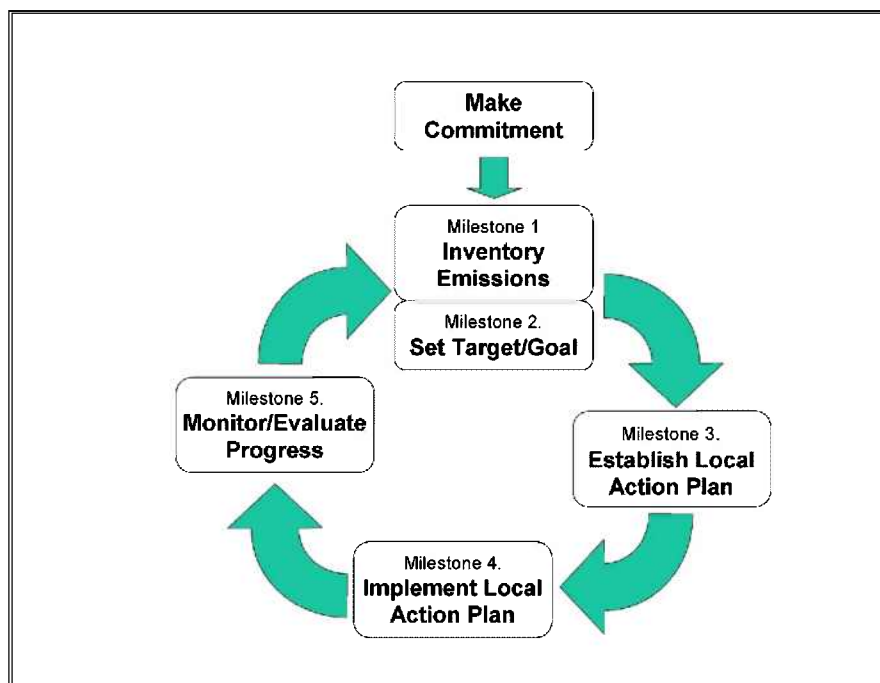
¹ Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2001: The Scientific Basis*

reduce greenhouse gas emissions through effective land use and transportation planning, wise waste management, the protection of natural habitat, the efficient use of energy, and by promoting public awareness.

The residents and businesses of Alameda can take pride in the fact that in July 2006, their City Council adopted a resolution to join the Alameda County-Cities for Climate Protection Campaign. ICLEI – Local Governments for Sustainability² launched the campaign in partnership with the Alameda County Waste Management Authority & Recycling Board and the Conference of Mayors. Other participants include the jurisdictions of Alameda County, Albany, Berkeley, Emeryville, Hayward, Newark, Oakland, Piedmont, Pleasanton, San Leandro and Union City.

By participating in ICLEI's Climate Protection Campaign, the City of Alameda pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change by accomplishing five milestones that will reduce greenhouse gas and air pollution emissions throughout the community.

Figure 1.1, Five Milestones for Municipalities



To oversee and help guide the effort involved with achieving these milestones, the City Council appointed a Climate Protection Task Force consisting of one member each from the Planning Board, Economic Development Commission, Transportation Commission, and Public Utilities Board, as well as a representative from Alameda County Industries and four public members at large. As a result of the considerable

² <http://www.iclei.org>

work of the Task Force, the City of Alameda has made significant progress on the first three milestones, including the development of this Local Action Plan, which completes Milestone 3. The five milestones are described in more detail in Chapter II of this report.

Structure of the Local Action Plan

The Local Action Plan contains five chapters:

- Chapter I is the Executive Summary.
- Chapter II is an introduction to climate change, some examples of its impacts at both the global and local levels, and a summary of past actions and future steps to be taken by the City of Alameda in addressing the issue.
- Chapter III discusses the baseline inventory of City and community-wide greenhouse gas emissions, and proposes a series of goals, which are defined by an overall goal of reducing community-wide emissions by 25% below 2005 levels³ by 2020.
- Chapter IV describes the initiatives developed by the Climate Protection Task Force to accomplish the overall goal of reducing emissions.
- Chapter V describes the steps necessary to implement the plan and monitor the community's progress towards its goals.

Key Highlights and Findings

- The City of Alameda's 2005 greenhouse gas emissions baseline inventory reveals that Alameda generated approximately 303,097 carbon dioxide equivalent units (eCO₂)⁴ that year.
- Alameda is expected to generate 329,867 eCO₂ by 2020 if the population grows at a rate of 0.65% annually.⁵
- 54% of greenhouse gas emissions are transportation related and are caused by the combustion of fossil fuels.
- 29% of greenhouse gas emissions are related to heating, cooling, and lighting residential uses, and 17% result from commercial uses.
- Alameda sent approximately 59,024 tons of solid waste to landfills in 2005.

³ 2005 was chosen as a baseline year because sufficient data was available in a broad range of categories to develop the baseline data inventory

⁴ Emission levels are reported in equivalent carbon dioxide (eCO₂) units because CO₂ is the most significant greenhouse gas in terms of emissions, and it can be used as the standard. Converting all emissions to carbon dioxide units allows for comparison between greenhouse gases of varying strengths.

⁵ The growth rate is a projection developed by the Association of Bay Area Governments that estimates population growth based on potential for land use, economic development and housing.

- About 84% of Alameda Power & Telecom's power mix is from carbon-free sources.
- The City of Alameda has a wide set of programs and initiatives in place that make Alameda a leader in the area of sustainable practices.

Initiatives and Target Emissions Reduction Goal

Since its formation, the Climate Protection Task Force has worked toward identifying multiple initiatives that will help Alameda achieve its overall goal of reducing community-wide emissions by 25% below 2005 levels⁶ by 2020. These initiatives have been organized into four categories, which include: 1) transportation and land use; 2) energy; 3) waste and recycling; and 4) community outreach and education. The initiatives are outlined and discussed in Chapter IV of this document.

Working Toward Community Goals

The primary purpose of the Local Action Plan is to reduce Alameda's greenhouse gas emissions. However, through the development and implementation of this Plan, the City of Alameda will also make progress toward related community goals, as discussed in Appendix D.1.

Figure 1.2

Community Goals Achieved by Greenhouse Gas Emission Reduction	
* Improving livability of community and quality of life	<ul style="list-style-type: none"> - Reduction of automobile dependency will decrease traffic congestion - Encouraging walking and biking can improve public health - Planting trees can cool summer air temperatures
* Reducing air pollution	<ul style="list-style-type: none"> - Decreases associated health risks
* Saving resources	<ul style="list-style-type: none"> - Using fuels and electricity more efficiently can lower operating costs, making funding available for other purposes - Redirecting the waste stream into composting, reusing, and recycling reduces upfront costs associated with creating virgin products, saving natural resources
* Securing the energy supply	<ul style="list-style-type: none"> - Reducing dependency on other countries for petroleum and its products, such as gasoline, helps safeguard against potential disruptions in supply

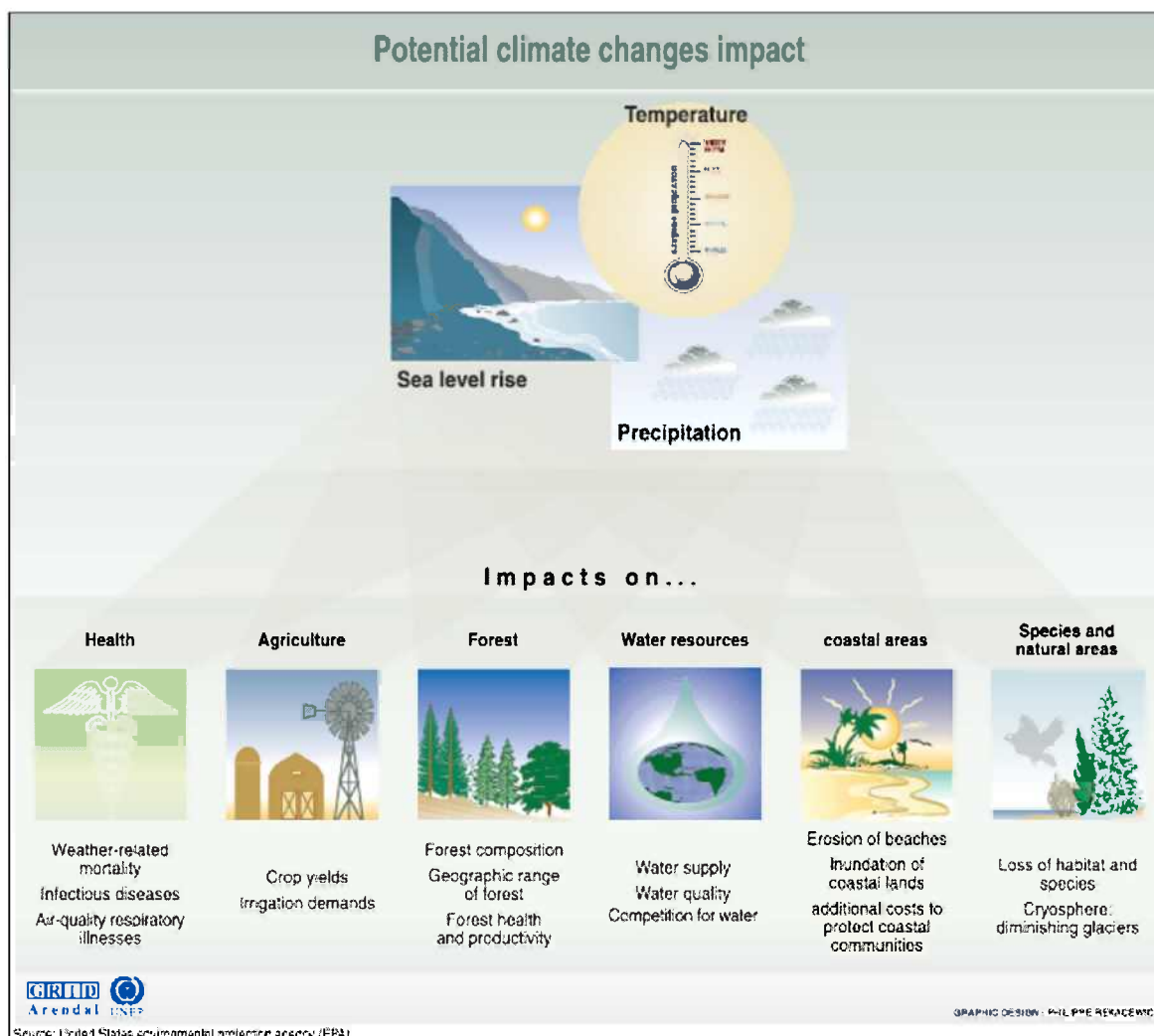
⁶ 2005 was chosen as a baseline year because sufficient data was available in a broad range of categories to develop the baseline data inventory

II. Introduction

Climate Change: A Global Phenomenon that Impacts the Local Level

The Intergovernmental Panel on Climate Change (IPCC) reports that human behavior is accelerating climate change. The release of carbon dioxide (CO₂) into the atmosphere from burning fossil fuels in power plants and for transportation purposes, the loss of forests that sequester CO₂, and methane (CH₄) emissions from landfills are the chief human causes of climate change. These emissions are referred to collectively as “greenhouse gases.”

Figure 2.1

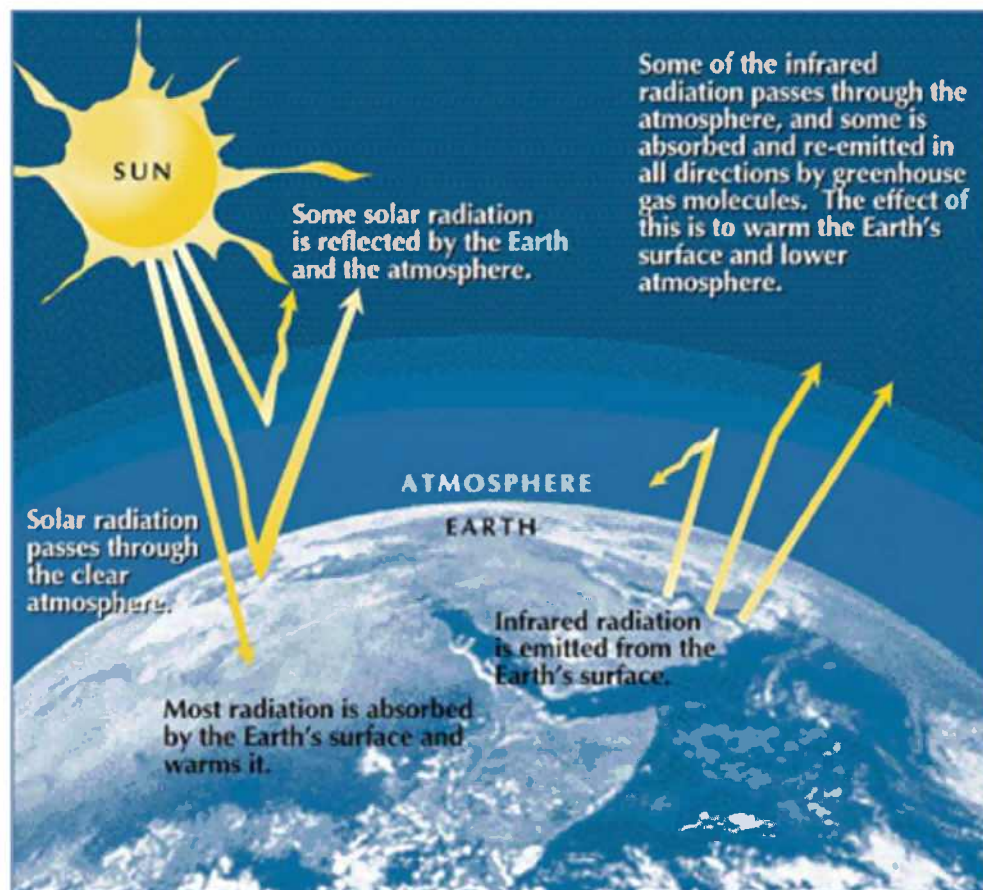


The gases of greatest concern are carbon dioxide, methane, nitrous oxide (N₂O), and halocarbons (non-metallic carbon compounds in the air). Carbon dioxide, produced primarily through burning gasoline, natural gas, coal, and oil, contributes to an estimated 82% of all U.S. greenhouse gas emissions. About three-quarters of the

carbon dioxide emissions produced by human activity during the past 20 years are due to the burning of fossil fuels. The United States has the highest per capita emissions of greenhouse gases in the world, at 22 tons of carbon dioxide per person per year. With only 5% of the world's population, the United States is responsible for 24% of the world's carbon dioxide emissions. California, despite its strong environmental regulations, is the second largest greenhouse-gas producing state in the nation after Texas, and emits 2% of global human-generated emissions. California's largest contribution of carbon dioxide is from vehicle emissions.⁷

The greenhouse effect refers to the phenomenon by which the earth's atmosphere traps solar radiation, or heat. Gases in the atmosphere operate like glass panels on a greenhouse that let electromagnetic radiation (light) through, but trap thermal radiation (heat) in.

Figure 2.2



⁷ Sources: Energy Information Administration: World Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuels, 1992-2001, U.S. Census Bureau: Countries Ranked by Population: 2001.

This natural greenhouse effect helps keep the earth's average temperature constant. Without the greenhouse effect, the earth's temperature would be approximately 0°F, and the planet would be largely uninhabitable.

The climate change problem has developed as human activities have added growing amounts of carbon dioxide and other greenhouse gases to the atmosphere, thereby increasing the natural greenhouse effect. The more greenhouse gases increase, the more heat is trapped. If the trend continues through this century, carbon dioxide concentration will rise to levels not seen on earth for 50 million years.

Emissions of methane account for just under 10% of U.S. emissions and result from decomposing landfill waste, manure and fermentation from livestock, and natural gas systems. Nitrous oxide is emitted through fertilizers.⁸

Scientists believe that the earth has a finite capacity to absorb and potentially neutralize emitted greenhouse gases. Once the levels of greenhouse gases overpower earth's climate systems, they will accelerate global warming beyond the rate at which it is occurring today.

Signs of Ongoing Climate Change

Climate change is a local problem with serious impacts for the San Francisco Bay Area, especially in bayside communities such as Alameda. Signs of ongoing climate change include:

- Rising sea levels, caused by warming of average ocean temperatures and the widespread melting of snow and ice. Calculations estimate that the rise in global sea level could range anywhere from approximately one to three feet by the end of 2100.⁹

Potential Local Impacts: Protected bayside areas, infrastructure, and property may be threatened. In California, the sea level is expected to rise up to 12 inches in the next 100 years, resulting in the erosion of beaches, bay shores, river deltas and marshes, and damage to infrastructure at or near sea level, such as harbors, bridges, roads and local airports. A rise in sea level would also cause increased salinity in estuaries, marshes, rivers and aquifers.^{10 11} Almost every home and business in Alameda is within five feet of the mean high tide line and could be impacted by rising sea levels and the ebb and flow of the tide in the absence of dams or other retention facilities.

⁸ Excerpt from City of Los Angeles, Environmental Affairs Office. 2001. Los Angeles Energy Climate Action Plan.

⁹ Cayan, D., P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick. 2006b. Projecting future sea level. (www.climatechange.ca.gov/).

¹⁰ Union of Concerned Scientists/Ecological Society of America, page 1.

¹¹ Neumann, James E. for the Pew Center on Global Climate Change. Sea Level Rise and Global Climate Change: A Review of Impacts to the US Coasts. February 2000.

- Unpredictable weather, with climate models predicting a 4°F temperature increase in the next 20 to 40 years.¹²

Potential Local Impacts: The change in duration of weather cycles is likely to result in longer dry spells and an increase of concentrated precipitation in the spring and fall by 20-30%. Heavier rainfall can cause flooding and mudslides, resulting in damage to property and infrastructure. Increased storm activity, together with rising sea levels, could increase beach erosion and undercutting.

- A decrease in the quantity of fresh water, resulting from changing temperatures. With warmer average temperatures, more winter precipitation will fall in the form of rain instead of snow, shortening the winter snowfall season and accelerating the rate at which the snow pack melts in the spring.

Potential Local Impacts: Warmer winters, with shorter winter snowfall seasons, accelerate the rate at which the snow melts in the spring. An increased snow melt increases the threat of spring flooding and decreases the Sierras' capacity as a natural water reservoir, resulting in decreased water availability for agricultural irrigation, hydro-electric generation, and the water needs of a growing population during the rest of the year. The decrease in snow-pack is particularly relevant in California and the Bay Area, as the Sierra snow-pack provides approximately 80% of California's annual water supply. Alameda's water supply has its origin in the Mokelumne River watershed of the Sierra Nevada mountain range. Alameda Power & Telecom receives much of its hydrological power supply from this watershed, and hydroelectric power supplies approximately 10% of the city's power.

- Negative effects on native plant species and animals could result from the warmer temperatures. Scientists report that more species are moving to higher elevations or more northerly latitudes in response to the effects of increased temperatures.

Potential Local Impacts: A significant change in local climate can destroy native plant and animal habitat. The increased flow and salinity of water resources could also seriously affect the food web and spawning of fish. In addition, the natural cycle of plants' flowering and pollination, as well as the temperature conditions necessary for a thriving agriculture could be negatively impacted. For instance, climate change could result in a significant economic impact due to reduced productivity of perennial crops such as grapes. In California, the Farm Bureau estimates the impact of climate change

¹² Cayan, D., E. Maurer, M. Dettinger, M. Tyree, K. Hayhoe, C. Bonfils, P. Duffy, and B. Santer. 2006a. Climate scenarios for California. (www.climatechange.ca.gov/).

on agriculture to be \$30 billion, mostly due to changes to operating methods, such as heating and chilling cash crops during the growing season.

- Public health consequences from an increase in mosquito-breeding and mosquito-borne diseases, such as the West Nile Virus. Heat waves are also expected to have a major impact on public health. Increased temperatures coupled with high concentrations of ground-level ozone and other air pollutants may lead to increased rates of asthma and other pulmonary diseases.

Potential Local Impacts: The incidence of bad air days in California's urban areas has increased, mostly during summer months. During hot, stagnant days, ground level ozone can build up to levels that violate federal and state health-based standards. In the summer of 2006, the Bay Area Air Quality Management District (BAAQMD) registered 11 Spare the Air days, which are implemented when air quality is forecast to be unhealthy due to high ozone levels. Also, in the summer of 2006, the California one-hour standard for ozone was exceeded 18 times in the Bay Area.¹³

The City of Alameda's Commitment to Sustainability

It has become increasingly apparent that global climate change is and will continue to pose serious risks to Alameda's climate, sea levels, native wildlife, and public health. It may seem unlikely that actions taken at the local level could have an effect on a problem of such great magnitude. But it is important to note that despite their relatively small size, cities and counties have the ability to reduce greenhouse gas emissions through effective land use and transportation planning, wise waste management, the protection of natural habitat, and the efficient use of energy to achieve a larger cumulative change.

The momentum for taking action locally has increased in recent years, and the residents and businesses of Alameda can take pride in the fact that in July 2006, their City Council adopted a resolution to join the Alameda County-Cities for Climate Protection Campaign (Appendix A). ICLEI – Local Governments for Sustainability¹⁴ launched the campaign in partnership with the Alameda County Waste Management Authority & Recycling Board and the Conference of Mayors. By participating in ICLEI's Climate Protection Campaign, the City of Alameda pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change, and to accomplish five milestones that will reduce greenhouse gases and air pollution emissions throughout the community. To oversee and help guide the effort

¹³ Westerling, A., and B. Bryant. 2006. Climate change and wildfire in and around California: Fire modeling and loss modeling. (www.climatechange.ca.gov/).

¹⁴ <http://www.iclei.org>

involved with achieving these milestones, the City Council appointed a Climate Protection Task Force consisting of one member each from the Planning Board, Economic Development Commission, Transportation Commission, and Public Utilities Board, as well as a representative from Alameda County Industries and four public members at large. The five milestones are outlined below.

Five Milestones to Reduce Greenhouse Gas and Air Pollution Emissions

Milestone 1: Analyze current greenhouse gas emission levels to determine current emission levels and forecast the growth in emissions that will occur without preventive action.

Chapter III of this document, *Alameda Greenhouse Gas Emissions and Reduction Target*, describes the findings of the baseline inventory conducted by ICLEI. The City of Alameda's 2005 greenhouse gas emissions baseline inventory reveals that Alameda generates approximately 303,097 carbon dioxide equivalent units (eCO₂) annually, and is expected to generate 329,867 eCO₂ by 2020 if no greenhouse gas emissions reduction initiatives are implemented. The report outlining Alameda's emissions sources and quantities is located in Appendix B.

Milestone 2: Set a reduction target, which is the specific reduction that Alameda aims to achieve by a designated year.

Alameda's Local Action Plan recommends a greenhouse reduction rate target of 25% below the 2005 baseline levels by the year 2020. With the recommended initiatives, the community may be able to avoid the production of 100,596 eCO₂.

Milestone 3: Develop a Local Action Plan that describes policies, programs, and measures that Alameda can implement in order to meet its reduction target.

Chapter IV, *Local Action Plan for Climate Protection Initiatives*, outlines seventeen initiatives in the areas of land use and transportation, energy, waste and recycling, and outreach and education to achieve the reduction target.

The Task Force ranked the individual initiatives as either Tier 1 or Tier 2, based on group consensus. Each initiative was modeled to evaluate the overall greenhouse gas emission reduction that could result from its implementation. The results of the modeling are included in Appendix C.

Milestones 4 and 5: Implement the Local Action Plan and monitor programs.

The implementation of all initiatives could result in an overall greenhouse gas emission reduction rate of approximately 25% or 77,579 tons eCO₂ in 2020. The Climate Protection Task Force recommends that the City Council adopt a reduction

goal of at least 25% and also recommends creating a standing commission that would meet quarterly to monitor the implementation of the Local Action Plan in coordination with staff.

III. Alameda Greenhouse Gas Emissions and Reduction Target

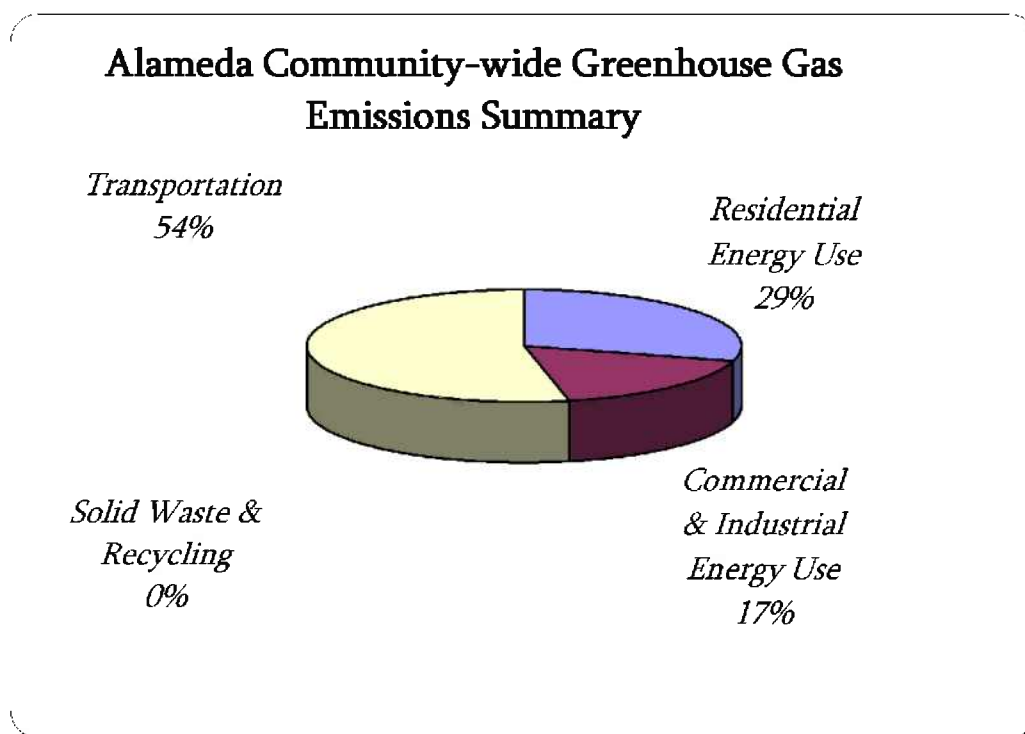
To assist local governments in quantifying greenhouse gas emissions, ICLEI – Local Governments for Sustainability and Torrie Smith Associates developed the Clean Air and Climate Protection (CACP) software package. The CACP software estimates emissions derived from energy consumption and waste generation within a community, determining emissions using specific factors (or coefficients) according to the type of fuel used. Emissions are aggregated and reported in terms of carbon dioxide equivalent units, or eCO₂. Converting all emissions to carbon dioxide equivalent units allows for the consideration of different greenhouse gases in comparable terms. For example, methane is twenty-one times more powerful than carbon dioxide in its capacity to trap heat, so the model converts one ton of methane emissions to 21 tons of eCO₂.

The emissions coefficients and methodology employed by the software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National GHG Emissions Inventories), the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form 1605), and, for emissions generated from solid waste, the U.S. Environmental Protection Agency's (U.S. EPA) Waste Reduction Model (WARM).

Although the software provides Alameda with a sophisticated tool, calculating emissions from energy use with precision is difficult. The quality of the results from the model relies on numerous assumptions, as well as the quality of available data. A variety of sources provided information for the Alameda baseline inventory. Alameda Power & Telecom (AP&T) and Pacific Gas & Electric Company (PG&E) provided electricity and natural gas data. The Metropolitan Transportation Commission, Bay Area Air Quality Management District (BAAQMD), and Bay Area Rapid Transit (BART) provided transportation data. Other organizations, including StopWaste.Org, Waste Management, Inc., Alameda County Industries, and the U.S. EPA provided solid waste data.

According to the CACP software and the data inputs, Alameda generated approximately 303,097 tons of equivalent carbon dioxide units (eCO₂) in 2005. Fuel consumption in the transportation sector is the single largest source of emissions, contributing approximately 54% of total emissions. Energy use in residential sectors contributed 29%, and commercial/industrial sectors generated 17% of total emissions. The solid waste and recycling sector are not captured in this evaluation due to software constraints. The software does not balance the benefits of recycling, composting, and capturing methane with the negative impacts of emissions emitted from standard land filling waste disposal. Regionally, cities have chosen to “zero out” any solid waste and recycling numbers.

Figure 3.1



** Note: The number for Solid Waste and Recycling is 0% because the software cannot calculate the benefits of recycling and composting with the negative impacts of methane emissions from land filling.*

Transportation

The transportation sector is responsible for about 54% of Alameda's greenhouse gas emissions. Motor vehicles driven within the City's geographical boundaries emitted approximately 161,395 tons of eCO₂ in 2005.¹⁵

The City's municipal vehicle fleet represents approximately 4.5% of citywide vehicle emissions and emits about 7,424 tons of eCO₂. The municipal fleet includes all vehicles owned and operated by the City of Alameda plus some contractor vehicles performing City functions, such as Alameda County Industries (ACI) garbage trucks.

When ICLEI conducted the baseline inventory of emissions, the ferry vessels operating from Alameda were owned by the City and leased to outside operators, and the emissions from the ferries were included in the inventory. Effective January 1, 2008, the state assumed ownership of the ferries. For future ferry emission inventories and analysis, the City will need to coordinate with the state to gather the appropriate data.

¹⁵ Sources: Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), and Bay Area Rapid Transit (BART) served as sources of transportation data.

Energy

Stationary energy use in residential, commercial, and industrial sectors accounts for 46% of total greenhouse gas emissions in Alameda. In 2005, Alameda's stationary energy use resulted in approximately 141,701 tons of eCO₂ emissions. Residential buildings emitted 89,084 eCO₂ and commercial/industrial buildings emitted 52,617 eCO₂.¹⁶ Major residential energy uses such as refrigeration, lighting, space heating, and water heating consumed about 137,906,700 kilowatt-hours (kWh) of electricity, or about 4,430 kWh per household, and 12,180,175 therms of natural gas, or about 391 therms per household. Commercial/industrial sector buildings consumed 223,590,100 kWh of electricity and 4,886,714 therms of natural gas.

Alameda municipal buildings and facilities consumed 9,938,888 kWh of electricity and 162,978 therms of natural gas, which resulted in a release of 2,003 tons of eCO₂ emissions into the atmosphere. Municipal streetlights and traffic lights consumed 2,056,158 kWh of electricity, which resulted in a release of 255 tons of eCO₂ emissions into the atmosphere.

Solid Waste and Recycling

According to Stopwaste.org, Alameda's recycling rate in 2005 was approximately 68 percent; the remaining 32 percent of solid waste was sent to the landfill. Once solid waste enters the landfill, it starts decomposing, which releases methane gas. In the landfill used by Alameda, approximately 74 percent of the methane is recovered, flared or perpetually contained in the landfill, and the remaining 26 percent is emitted into the atmosphere. Methane is 21 times more potent than CO₂ and therefore carries a high greenhouse gas emission "price tag."

The software used to create the baseline evaluation requires a detailed explanation regarding the calculation of solid waste and recycling. The software calculates the amount of solid waste sent to the landfill, the amount of methane gas that is captured, and the impact of methane released into the atmosphere at the landfill. Since more methane is captured than released into the atmosphere, the baseline evaluation report states that Alameda has -11,715 tons of eCO₂. This calculation distorts the actual solid waste greenhouse gas emissions, since emissions cannot actually be negative. In addition to this distortion, the software is unable to properly evaluate greenhouse gas emission rates for composting, reuse, and recycling. As a result of these limitations of the software, the solid waste emissions are zeroed out. Detailed information on the methodology used can be found in Appendix C.

Overall, the benefits gained from recycling and the associated reduction in "upstream" energy use, that is, energy used to produce virgin products, far outweigh sending waste to the landfill. For example, if Alameda recycled an additional 20,000 tons of waste, then the City would reduce its annual eCO₂ emissions by an additional 53,000 tons.

¹⁶ Sources: Alameda Power & Telecom (AP&T) and Pacific Gas & Electric Company (PG&E),

Alameda Greenhouse Gas Emissions Forecast

Figure 3.2 shows the projected growth in greenhouse gas emissions by 2020. Projections are based on the assumption that energy consumption and transportation use will grow as population increases. The forecast was conducted by applying population growth factors to Alameda's base year residential, commercial/industrial, and transportation data.

The emissions forecast represents a "business-as-usual" prediction of how greenhouse gas emissions may change in Alameda over time. With an annual population growth rate of 0.65%, greenhouse gas emission levels are expected to increase by approximately 26,770 eCO₂ to 329,867 eCO₂ by 2020 under the business-as-usual projection. Municipal operations are not expected to grow by year 2020 due to projections of a relatively small population increase. This forecast takes into account the overall greenhouse gas emissions avoided through existing programs and policies that reduce emissions.

Figure 3.2

Alameda's Emissions Summary		
	Community Analysis	Municipal Operations Analysis
Base year	2005	2005
Indicators used to generate forecast	0.65% (Annual population growth rate based on ABAG data)	No growth anticipated
Quantity of eCO ₂ emissions in base year (tons)	303,097	9,682
Forecast year	2020	2020
Business-as-usual projection of eCO ₂ emissions in 2020 (tons)	329,867	9,682

Source: CACP Model Output and ABAG

Greenhouse Gas Emissions Reduction Target

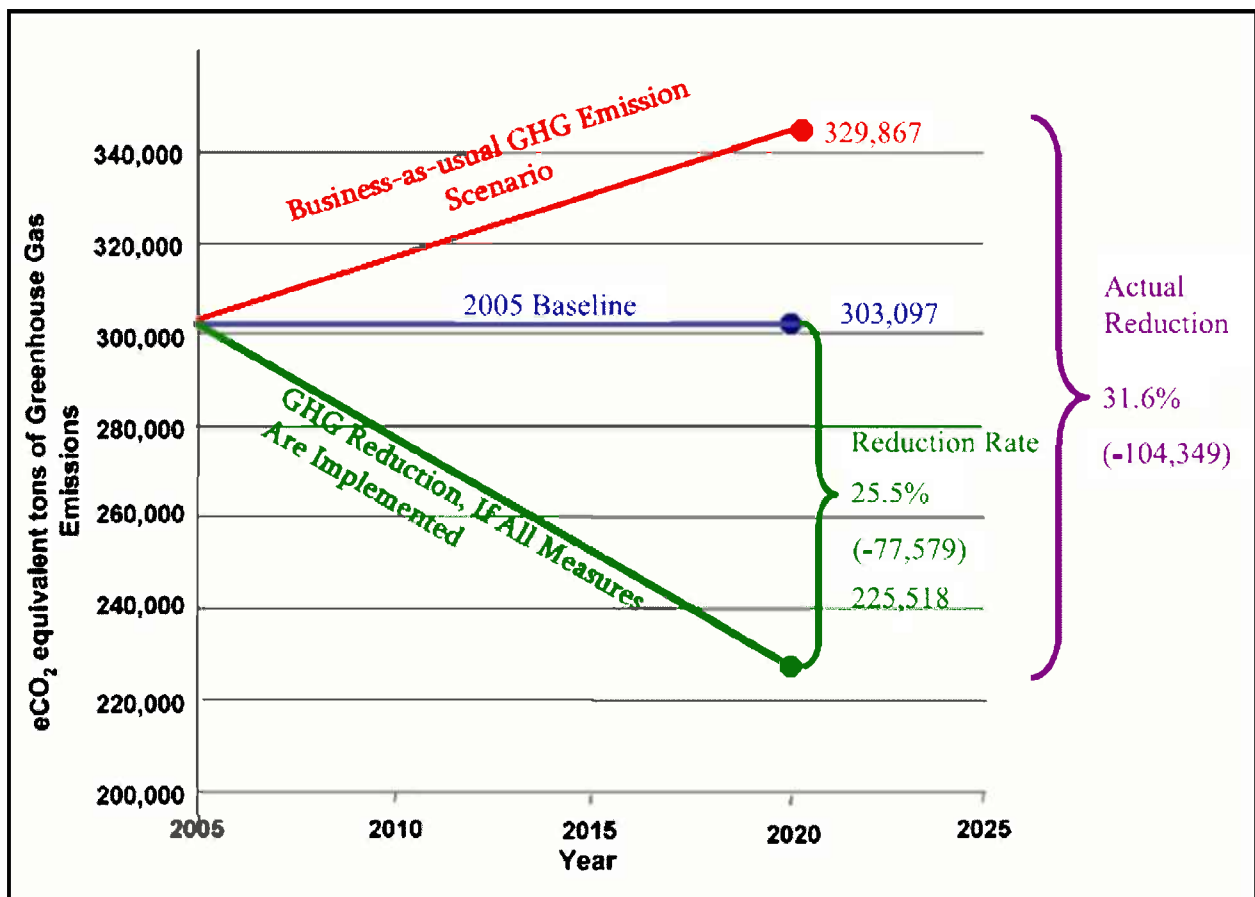
The Action Plan includes a recommended set of emissions reduction initiatives developed by the Climate Protection Task Force. The Task Force recommended initiatives by considering community preferences, existing city programs and policies, available community and City resources, and priorities. The Action Plan's initiatives to reduce greenhouse gas emissions are described in Chapter IV.

In order to develop the greenhouse gas emissions reduction target, the initiatives were modeled using the Clean Air and Climate Protection (CACP) software. This is the same computer-modeling program that was used to develop the 2005 greenhouse gas emissions baseline. Since the computer-modeling program relies on quantitative entries, a set of qualitative assumptions was developed for each initiative. These assumptions are summarized in Appendix C.

Figure 3.3 below illustrates how Alameda reached a greenhouse gas emission reduction target of 25%. If all of the initiatives are implemented, the City and community of Alameda would reduce emissions by 77,579 tons of carbon dioxide equivalent units (eCO₂). If the City achieved this level of reduction, by 2020, a decrease of approximately 25% over the 2005 baseline evaluation could be realized, as shown in Figure 3.3.

Figure 3.3 below illustrates Alameda's greenhouse gas emissions reduction target. The business-as-usual line represents the increase of greenhouse gas emissions if Alameda keeps growing and does absolutely nothing to decrease greenhouse gas emissions. The 2005 Baseline line represents the baseline emissions calculations as of 2005 and Alameda's emissions without any population growth or any implementation of emission reduction measures.

Figure 3.3, Alameda's Greenhouse Gas Emission Scenarios



The GHG Reduction line shows the potential reduction target scenario at slightly more than 25% below the 2005 baseline. In this scenario, the population increases while emission reduction programs and policies are implemented. If a 25% target rate is achieved, the actual real emission reduction is approximately 31.6% from the 2020 business-as-usual scenario.

Even with an increase in population, however, the implementation measures are long-range in nature, which could mitigate the increase of population and reduce greenhouse gas emissions to below 2005 baseline levels.

IV. Local Action Plan for Climate Protection Initiatives

The initiatives are organized into four categories to reflect the emissions inventory and reduction target described in Chapter III: 1) transportation and land use; 2) energy; 3) waste and recycling; and 4) community outreach and education.

Transportation and Land Use Initiatives

As described in Chapter III, the transportation sector is the greatest contributor to greenhouse gas emissions in Alameda. The transportation and land use initiatives are designed to: 1) reduce the number of automobile trips by implementing initiatives that encourage Alameda residents, employees, and visitors to use alternative modes of transportation, such as public transit, cycling, and walking; 2) promote land development that makes transit, bicycling, and walking more attractive alternatives; and 3) encourage the use of cleaner-running vehicles and alternative fuel vehicles.

Initiative 1: Require that all new major developments' short and long-term transportation emissions impacts are reduced by 10%

This initiative would be implemented by the following types of measures:

- *Alameda Point transit-oriented development. Alameda Point represents a major redevelopment opportunity and challenge for the City of Alameda. The greenhouse gas emissions analysis found that a transit-oriented development pattern at Alameda Point would result in a reduction of approximately 720 eCO₂ tons over a non-transit-oriented development pattern.*
- *Transportation Demand Management. The City of Alameda can require that major new developments mitigate their transportation impacts by providing annual operating, capital, and maintenance funds to support additional buses, shuttles, and/or water shuttles to support transportation system management (TSM) projects. A reliable transit system largely relies on an efficient street system. For example, the City required the recently approved Alameda Landing Project to provide funds for transit services from the site to Oakland Bay Area Rapid Transit (BART) stations and Jack London Square. The funds would be used to hire a transportation system/transportation demand management manager and may also be used to fund shuttles and water taxis. Described as an "eco-pass" program, each homeowner and business in the project could help fund the program and in return would receive an eco-pass that would allow those people to ride the transit at no additional cost. The eco-pass program is designed to attract future residents and business to Alameda because they want to use transit services instead of their cars.*
- *City of Alameda Bike Plan. Alameda's level geography, mild climate, and tree-lined streets make Alameda an excellent community for people who choose to walk or bicycle instead of using their cars for their trips to work, shopping, and/or recreation. Ordinance amendments that facilitate bicycle parking and shower facilities in commercial developments and along*

the main streets would encourage people to use this form of transportation. To make bicycling an attractive commute mode of transportation, it is important to provide facilities that would allow an employee to shower and change into their work clothes after bicycling to work in the morning. The City's zoning ordinance could be amended to require that major new buildings include secured bike lockers and shower facilities for employees. Appendix D.2 (correspondence from BikeAlameda) contains other suggested improvements including expansion of the interconnected bike route system.

- *Revise parking standards. If parking areas are appropriately sized and fully utilized, then other alternatives may become more attractive. However, this measure must be carefully considered, as a lack of parking could increase cruising for parking spaces, which in turn increases greenhouse gas emissions. The Development Services Department is currently leading a study of parking supply and requirements in the Webster Street and Park Street commercial districts that also looks at providing alternative transportation strategies. Those studies will provide the basis for decisions by the Planning Board and City Council regarding any change to the commercial parking requirements.*
- *Revise street design standards and reengineering existing streets (if economically feasible) to promote pedestrian and bicycle use and encourage the use of alternative modes of transportation. The design of streets can play an important role in making bicycling, walking, and transit a more attractive alternative to the automobile. The City of Alameda's General Plan already recognizes the importance of street design and includes General Plan Policy 4.3.d, which states: "Develop transit-oriented streets where feasible." This initiative would include a comprehensive review of the City's current street standards to ensure that these standards facilitate alternative modes of transportation.*

Initiative 2: Provide transit and shuttles with signal priority lanes and queue jumpers to make transit a more attractive alternative to the automobile.

General Plan Policy 4.3.d states: "Develop transit-oriented streets where feasible." As the region, Oakland, and Alameda continue to grow, congestion at the estuary crossings, at the on and off-ramps to I-880, and on the other interstates will increase. As congestion increases, travel times will increase. To make transit a more attractive alternative, the City of Alameda should coordinate with the City of Oakland to provide signal priority lanes and "queue jumpers" that will allow buses and shuttles to bypass congestion and shorten the travel time for those choosing to use buses instead of their automobiles. The City of Alameda has designed a "queue jump" lane in the plans for the new Willie Stargell intersection with Webster Street, allowing buses to jump to the front of the line when entering the Posey Tubes. The City should continue its work with the City of Oakland to identify signal priority and queue jump locations between the tubes and the Lake Merritt and 12th Street BART stations.

The City of Alameda, BART, AC Transit, and the City of Oakland are currently developing a scope of work to focus on opportunities to improve transit connections between the Fruitvale BART Station and Alameda. The Fruitvale Rail Bridge and former Alameda Beltline right of way provide an excellent and unique opportunity to create a dedicated transit lane from Alameda Point all the way

across Alameda to the Fruitvale Bridge, across the bridge, and to within a few blocks of the Fruitvale BART Station.

Initiative 3: Develop and fund alternative transportation strategies in the City's budget.

This initiative would be augmented by the following measures:

- *Create an alternative transportation funding priority list for the City's Capital Improvement Program. The list should include project costs and funding sources. The City of Alameda should establish an alternative transportation Capital Improvement Project list and fee that would establish and fund public transportation priorities. The Transportation Commission has developed a draft Transportation Element update for the City's General Plan, which will provide a policy basis for creating an alternative transportation-funding plan. The plan should identify project costs to implement top ten priorities.*
- *Implement a new transportation mitigation fee to fund alternative transportation priorities. In 2001, the Traffic Capacity Management Program (TCMP) instituted mitigation measures to manage the remaining capacity in the Webster and Posey Tubes by reducing standard peak hour trips based on land use. The program proposes TDM/TSM measures but includes no funding. Mitigation fees would not only assist the City's implementation of the TCMP, but could further other alternative transportation priorities.*
- *Charge staff to engage actively with federal, state and regional organizations to secure capital and operating funding for sustainable transportation. Reducing the cost of transit passes will make transit a more attractive alternative to the automobile. Additional public subsidies from regional transit agencies (MTC, AC Transit, BART, and others) and the State of California will be required to cover the costs of providing transit services. Currently, fares do not cover the costs of providing transit services, and the transit agencies depend upon public subsidies to pay for the costs of providing the services. Fares from the Alameda Harbor Bay Ferry service, for example, cover about 45% of the costs. Therefore, the public must lobby the State of California to shift its transportation funding priorities to funding transit services, or the public must be willing to pass bonds or increase taxes to pay for increased public transportation subsidies.*

Initiative 4: Continue to convert the City's fleet to alternative fuel vehicles, such as biodiesel, electric, and other alternative fuels.

The City of Alameda recently purchased six electric vehicles to replace existing City fleet vehicles and is beginning a pilot program to enable three maintenance trucks to use B-20 biodiesel. Currently, 50% of Alameda County Industries' collection fleet runs on compressed natural gas (CNG) fuel. Waste Management and Alameda County Industries use clean-fuel vehicles that have lower greenhouse gas emissions than standards hauling vehicles to transport waste material from the Davis Street transfer facility to the Altamont Pass.

Initiative 5: Encourage Alameda employers to provide opportunities for “flex hours,” compressed workweek and telecommuting schedules to reduce vehicle miles traveled, and reintroduce transportation reduction programs.

As a standard condition on new business developments west of Grand Street, the City should encourage the provision of flextime, compressed workweeks, and telecommuting options to reduce commute traffic and greenhouse gas emissions from employee commutes.

The Bay Area Air Quality Management District recommends flexible work schedules and compressed workweeks as effective ways to reduce greenhouse gases. The City of Alameda provides a flexible 36-hour workweek compressed into four days for many of its employees. The four-day workweek can result in a 20% reduction in weekday automobile emissions for each employee who takes advantage of the flexible work schedule. The City’s former Pacer program, which is no longer eligible for Measure B funds, provided financial incentives for using carpooling and alternative transportation. Reinstitution of a similar program would enhance the City’s commitment to reducing the number of vehicle miles traveled, as would the “eco-pass” program that is designated to begin in 2008, which will provide City employees with AC transit passes.

Initiative 6: Expand the geographic area of the Work/Live ordinance to provide greater opportunities for reduced work-related commutes.

Allowing people to live where they work reduces the need for commute trips. General Plan policy 5.5e states: “Minimize commuting by providing sufficient jobs and nearby housing opportunities.” General Plan Housing Element Policy 2.a.vii states: “Encourage work/live opportunities as a way to reduce traffic impacts of housing, to provide affordable housing opportunities, and to stimulate business incubators.”

The City’s current work/live ordinance only allows work/live studios in existing buildings in specific zoning districts between Sherman Street, the Estuary, Tilden Way and Buena Vista Avenue. The ordinance should be expanded to include other areas of the city, such as Alameda Point, and should be amended to allow for the construction of new work/live buildings.

Initiative 7: Encourage alternative fuel “Car Share” programs.

Car sharing programs provide opportunities for residents to reduce the number of cars that they maintain. By making cars available for emergency or occasional use, residents may be more likely to depend on transit as a regular form of transportation. For people who work in Alameda, transit becomes a more attractive alternative, because the employee has guaranteed access to a vehicle in the event of an emergency or unexpected family or personal matter, even if they used transit that day. This measure would reduce greenhouse gas emissions, because overall, more people would be driving fewer cars.

The City of Berkeley established a car share program, which provides hybrid or alternative fuel vehicles during the week for City employees on City business. The vehicles are available to Berkeley residents after business hours during the evening and weekends. The program reduces maintenance

costs for the City, maintains their fleet capacity and provides car share opportunities for residents. Appendix C provides additional information on this initiative.

Initiative 8: Develop park-and-ride lots and expand ridesharing opportunities in large-scale developments at major transportation access nodes.

Strategically located park-and-ride lots adjacent to major transit corridors provide opportunities for Alameda residents who do not live within walking distance of a transit route to drive their cars to a dedicated parking area and either use transit for the remainder of the trip, or carpool.

The City of Alameda recently required that the Alameda Landing development provide a park-and-ride lot as part of that project, and the City has been studying the feasibility of creating a park-and-ride lot at the entrance to the Posey Tube at the intersection of Mariner Square Drive and Constitution Drive.

Energy Initiatives

The 2005 baseline inventory reveals that the second largest contributor to Alameda's greenhouse gas emissions (47%) comes from heating, cooling, and lighting commercial and residential buildings in Alameda. The use of natural gas accounts for 74% of the energy related emissions. Electricity use accounts for 26% of energy related emissions. To address these significant sources of greenhouse emissions, the Action Plan objective is three-fold:

1. Encourage the increased use of renewable energy resources,
2. Reduce energy consumption from existing residential, commercial, industrial, and institutional buildings and uses; and
3. Ensure that all new residential, commercial, industrial, and institutional buildings are designed and constructed to minimize energy consumption and greenhouse gas emissions.

Initiative 1: Encourage the Alameda Public Utilities Board to require that Alameda Power & Telecom maintain and expand its source mix to 100 % carbon-free energy

Currently AP&T obtains 85% of its energy from renewable sources, such as geothermal, landfill gas, wind and hydroelectric. This excellent mix of renewable energy sources contributes to Alameda's relatively small per capita contribution to greenhouse gas emissions relative to other cities and counties. This initiative is intended to establish a goal for AP&T to maintain and expand the existing renewable energy source portfolio and become the first in the state to become completely renewable.

AP&T and the Public Utilities Board have updated the Greenhouse Gas Reduction Action Plan (Appendix E), which focuses on completing all cost effective, effective, feasible and reliable energy efficiency measures by 2016. The plan also includes programs to reduce vehicle emissions through encouraging plug-in hybrid electric vehicle technology, and supports other measures such as conversion of some natural gas uses to solar (e.g. water heating) or high-efficiency electricity use.

Initiative 2: Require that all recommended City Council actions include an analysis or evaluation of whether the action supports or is consistent with Alameda's Local Action Plan Initiatives and furthers progress toward the Greenhouse Gases Reduction Target

This initiative ensures that the City of Alameda does not inadvertently take actions or implement policies that may be counter productive to reducing greenhouse gases. The intent of this policy is to ensure that the greenhouse gas effects of all City actions are considered.

Initiative 3: Provide technical assistance for energy efficiency and track progress through recognition programs. If feasible, develop financial incentives to educate and encourage Alameda residents and businesses to be energy efficient.

This program would include informational handouts, technical assistance, and financial incentives to supplement AP&T and PG&E rebate and educational programs to encourage Alameda residents and businesses to upgrade their facilities with systems to reduce their energy consumption. A recognition and rewards program could encourage Alameda businesses and households to make important changes in their daily activities. Stopwaste.org has a similar program called the "Green Business Program" that recognizes businesses that are environmentally sensitive and good stewards of the environment. Locally, the Alameda County Environmental Services Department implements this program.

Initiative 4: Amend the Alameda Municipal Code to include sustainable design and green building standards for all new, substantially expanded, and remodeled buildings

A series of sustainable design and green building Municipal Code amendments should be adopted to ensure that new construction in Alameda is designed and constructed in a manner that minimizes energy use and greenhouse gas emissions. These amendments could be developed and adopted as a comprehensive package or in a series of individual amendments. Specific amendments that should be considered in the near term include using Leadership in Energy Efficiency and Environmental Design (LEED) standards and/or Green Build's point rating system. For example, the City's new Alameda Free Library was constructed to achieve a Gold LEED Standard and Peet's Coffee and Tea recently designed and constructed its new Alameda facility in the Harbor Bay Business Park to achieve a Silver LEED Standard. Clif Bar and Company is currently designing its new headquarters building at Alameda Landing to meet a Platinum LEED standard.

Initiative 5: Develop a program to reduce the use of 2-cycle combustion engines, including the enforcement of existing ordinances. Encourage the establishment of trade-in programs.

2-cycle combustion engines are commonly found in lawnmowers, leaf blowers, and other tools. The reduction of the numbers of combustion engines used in Alameda may have a negligible impact on the overall greenhouse gas emissions. However, if 2-cycle combustion engines were replaced with alternative fuel or electrical motors, Alameda may achieve an overall reduction in emissions.

Initiative 6: Develop a wood-burning prohibition ordinance to reduce air pollution for new residential construction
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Wood-burning prohibition ordinances may also have a negligible impact on reducing greenhouse gas emissions. However, a prohibition on the installation of new fireplaces for future development would help prevent additional emissions.

Waste and Recycling Initiatives

According to the 2005 Baseline Inventory, Alameda's residents and businesses sent approximately 59,024 tons of waste to the landfill in 2005. That is the equivalent of 1,628 pounds of waste for every man, woman, and child in Alameda. As waste in landfills decomposes, it generates methane gas, which is 21 times more potent as a greenhouse gas than CO₂. The Action Plan's waste and recycling initiatives are designed to reduce the waste- and recycling-based greenhouse gas emissions by maximizing recycling, reuse, and composting.

Initiative 1: Adopt "Zero Waste Strategy" Programs and Ordinances.

A successful Zero-Waste Strategy combines a number of programs and requirements to mandate and encourage Alameda households and businesses to reduce consumption and increase reuse and recycling. A zero waste strategy could include the following programs and requirements.

- *A ban on polystyrene foam to-go containers (i.e. Styrofoam). Polystyrene foam is not biodegradable, must be placed in landfills, and has an estimated life span of 400 years*
- *A stronger environmental purchasing policy. The City has a policy to encourage City departments to purchase recycled content office supplies. The existing policy could be strengthened to further reduce waste generation by the City of Alameda's operations. See Appendix F for further reference on environmental purchasing.*
- *A stronger Construction and Demolition ordinance. The City's existing Construction and Demolition ordinance could be strengthened to better enforce and monitor on-site waste sorting and recycling, and more aggressive recycling targets.*
- *Work with the Alameda Unified School District to fully implement recycling, reuse and composting at schools. Work with Stopwaste.org to provide on-going recycling education at schools. With 18 schools and approximately 10,000 students, the schools represent an excellent opportunity to raise awareness among the next generation for recycling, reusing, reducing waste and composting to significantly reduce greenhouse gas emissions.*
- *Work with the State Department of Conservation to develop more centrally located California Redemption Value recycling drop-off areas for bottles and glass. Implement required zoning changes to allow recycling centers that recover other recyclable materials to locate in Alameda.*

Initiative 2: Encourage the development of the biodiesel industry in Alameda, including local collection of used animal fats and vegetable oils for rendering into biodiesel. In addition, the City should develop policies that encourage the location of biodiesel and compressed natural gas (CNG) facilities in Alameda through implementation of required Municipal Code revisions.

A bio fuel generation facility on the island could utilize waste oils from local restaurants and Alameda households to create biodiesel for use by municipal services, local residents, businesses, the boating industry, and heating. Requiring new service stations to include a biodiesel pump would provide a convenient and cost-effective local alternative. Appendix D.3 provides additional information on ways biodiesel could be implemented.

Outreach and Education Initiatives

To achieve the Action Plan's greenhouse gas emission reduction goals will require the active participation and cooperation of all of Alameda's residents and businesses. The Outreach and Education Initiatives are designed to increase awareness and participation by every Alameda household and business in the effort to combat global warming.

Initiative 1: Develop a multi-faceted community outreach program to increase public awareness and participation in greenhouse gas reductions.

Community outreach is an important component to a successful outcome. In order to be effective, the community outreach program should include an array of programs, information, and resources that are available from different organizations, media sources, and in multiple languages. A proposed draft program is included in Appendix D.4. The program could include:

- *A citywide education forum sponsored by the City in which the community can engage in a meaningful discussion about climate change.*
- *Public information about global warming and City local actions and programs available to reduce greenhouse gases provided on the City of Alameda website, at City facilities such as the Permit Center, and AP & T, and at other public venues.*
- *A brochure or press kit that showcases the City of Alameda's sustainability efforts and greenhouse gas reduction goals.*
- *A review of all environmental programs and materials to ensure equitable distribution of resources, technical assistance and financial support to all residents of Alameda (i.e. resources available in multiple languages, easily accessible for seniors)*
- *An "Adopt a tree" program in which people can donate money for the City to plant a tree.*
- *Advertise City energy and recycling audits, efforts and programs for sustainability.*
- *An emission off-set program and junk mail reduction partnership to reduce waste streams and potentially generate revenue for the City to be used for other outreach activities (Appendix D.4)*

V. Implementation and Monitoring

This Local Action Plan is intended to serve as a guide to help the City of Alameda and the larger community in pursuing work plans with the objectives of conserving resources and further abating global warming.

Chapter IV describes the actions that will be necessary to meet the City of Alameda's greenhouse gas reduction goal of 25%, or approximately 77,579 tons of eCO₂ by the year 2020. Implementing the Local Action Plan for Climate Protection will, therefore, require increased and well-coordinated efforts in all of these areas. If the City of Alameda is to reach its reduction target by the year 2020, it is imperative that over the next one to three years, the City and community at large:

- Dedicate time to managing and guiding implementation of the initiatives.
- Accelerate and expand existing programs in all areas – land use and transportation, energy efficiency, renewable energy, and solid waste and recycling.
- Develop the infrastructure to support new programs.
- Secure resources to implement actions.
- Set up and maintain tracking mechanisms and indicators to measure progress.

The GHG Emissions Analysis Summary Table, which follows this Chapter, is organized by initiative area and estimates the amount of potential eCO₂ reductions that might be generated by each initiative. Not all initiatives provide quantifiable reductions, but nevertheless may be important to the success of the City in meeting its reduction goal. The table also describes the resources needed to accomplish the initiative and the potential funding sources.

The City should have dedicated staff to support City departments and private entities to integrate climate protection into their standard operating procedures. To be successful, staff should create a process that includes participation of stakeholder groups and implementing departments. The community itself needs to become involved. Greenhouse gas emission reduction starts at home with recycling, appropriate landscaping, home improvements that increase energy efficiency and a reduction in trips that involve the use of the automobile. Involvement includes education and support by the local school district and private schools. Local businesses and institutions need to also become leaders in creative ways to reduce their carbon footprints.

The City's biannual budget, particularly the Capital Improvement Program, may serve as the funding resource for successful implementation of many of the Local Action Plan initiatives. On a biannual basis, staff should report on the progress of implementing the initiatives and reevaluate and recommend to the City Council action priorities, target levels, and future monitoring of emission reduction programs. The first review is anticipated in 2010.