

[City/Town/County] of [Jurisdiction]

Climate Action Plan

[Month Year]

Note to user: *This Climate Action Plan template is intended to assist you with the development of your own local Climate Action Plan. Please feel free to modify and use as much or as little of this document as you wish.*

Letter from the Mayor

[A letter from the Mayor/Supervisor can help to demonstrate leadership and set the tone for the Climate Action Plan's implementation.]

Acknowledgements

[Acknowledge all those who contributed to the development of the document. Highlight the principal author so all readers know whom to contact for further information, as well as all members of the team or working group that collaborated to produce the document. Include names, titles and departments. Also thank any other contributors to the document here.]

[City/Town/County] of [Jurisdiction] Climate Action Plan

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Background: The Alameda County Climate Protection Project

In June 2006 eleven local governments in Alameda County, CA committed to becoming members of ICLEI – Local Governments for Sustainability (ICLEI) and participating in the **Alameda County Climate Protection Project (ACPP)**. The participating jurisdictions include:

| | | | |
|----------------|------------|----------|-------------|
| Alameda | Berkeley | Newark | San Leandro |
| Alameda County | Emeryville | Oakland | Union City |
| Albany | Hayward | Piedmont | |

The project was launched by ICLEI in partnership with the Alameda County Waste Management Authority & Recycling Board (StopWaste.Org) and the Alameda County Conference of Mayors. In committing to the project, the jurisdictions embarked on an ongoing, coordinated effort to reduce the emissions that cause global warming, improve air quality, reduce waste, cut energy use and save money. Toward that end, ICLEI and StopWaste.Org assisted each participating jurisdiction to conduct a baseline greenhouse gas emissions inventory, set a community-wide emissions reduction target, and develop a climate action plan that consists of polices and measures that, when implemented, will enable each jurisdiction to meet its target.

This document is a “template” climate action plan for use by the 11 participating local governments to create tailored climate action plans for their communities. Its purpose is to save participants’ time and resources by providing a useful action plan format, background information on the science and impacts of global warming, and detailed suggestions on the types of policies that municipalities can implement to achieve the desired emissions reductions. In developing this resource, ICLEI relied on the expertise of StopWaste.Org staff as well as the experiences of the nationwide network of ICLEI member cities, each of which is working toward similar climate protection goals.

About Alameda County, California

Alameda County is a metropolitan region of the San Francisco Bay Area. The 2005 census estimates the County’s population at 1.45 million, the 7th most populous county in the State of California. Like other metropolitan areas, inhabitants of the county and the cities therein contribute to the problem of global warming, while also holding immense potential to contribute to the solution. The energy consumed and the waste produced within the county’s boundaries result in thousands of tons of heat-trapping greenhouse gas emissions. But, as is evidenced by the widespread municipal involvement in the Alameda County Climate Protection Project, the local government participants are firmly committed to building on existing efforts to reduce the emissions that cause global warming.

Regional governments and nations across the world can only manage what they measure. The first step in managing greenhouse gas emissions, therefore, is to establish an inventory of those emissions. Below is a chart of global greenhouse gas emissions, which includes the amount of short tons of carbon dioxide equivalent (tons CO₂e) that is generated worldwide, within the United States, the State of California, and in Alameda County. For context, California is the 16th largest emitter in the world - if it were considered a country of its own - second only to Texas in the US. Per capita emissions in California, however, are among the lowest in the US. Further, emissions in Alameda are significantly less than the California average.

Table (1). World Greenhouse Gas Emissions Scenarios

| Locations | GHG – Short tons of CO ₂ e per year | Percent of World GHG Emissions | Percent of U.S.A Emissions | Percent of California Emissions |
|--------------------------------------|--|--------------------------------|----------------------------|---------------------------------|
| World (2000) | 33,712,900,000 | 100.0% | | |
| United States (2000) | 6,871,700,000 | 20.4% | 100% | |
| California (2004) | 542,184,000 | 1.6% | 7.9% | 100.0% |
| ACCPP Region (2005) ^{1,2,3} | 5,710,393 | | 0.083% | 1.105% |
| ACCPP Governments (2005) | 80,532 | | | 0.015% |

Source: (2000) World and United States emissions from World Resources Institute – Climate Analysis Indicators tool (<http://cait.wri.org/>). (2004) California emissions from California Energy Commission (<http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-SF.PDF>). Figures exclude land use related emissions.

Note: All units in this report are reported in short tones (tons). When source data is found in metric tones (MT or tonnes) to convert it into short tones (tones) a conversion factor of 1.102 short ton per metric ton is applied.

Fast Facts

2000 Worldwide per capita GHG emissions (tons CO₂e) **5 short tons CO₂e**
 2004 US per capita GHG emissions (tons CO₂e) **23 short tons CO₂e**
 2004 California per capita GHG emissions (tons CO₂e) **17 tons CO₂e**

Additional source: 2004, U.S.A. GHG Emissions from EPA (<http://www.epa.gov/climatechange/emissions/downloads06/06ES.pdf>)

Alameda County Fast Facts

Population (2005): **1.45 Million**
 Number of Autos (2000): **4.5 Million**
 Annual Electricity Usage per Capita (2004): **6,738 kWh**
 Annual Natural Gas Usage per Capita (2004): **330 therms**
 Annual Water Usage per Capita (2004): **46,000 gallons**
 Avg. Waste per person (2004): **1.03 tons**
 Avg. Waste per Business (2004): **35.0 tons**
 Avg. Waste Diversion Rate (2004): **60%**
 Per capita GHG emissions⁴ **5.86 tons CO₂e**

Source: StopWaste.org

¹ Data includes the 10 cities in the ACCPP only (Alameda City, Albany, Berkeley, Emeryville, Hayward, Newark, Oakland, Piedmont, San Leandro and Union City).

² The Baseline year is 2005 for all cities, except for Albany and Emeryville which inventoried 2004 emissions.

³ GHG emissions for ACCPP cities are based on ICLEI GHG Emissions Protocol for Local Governments, which includes end use energy, transportation and waste sector within city boundaries. World and U.S.A emissions are based on national GHG inventories which additionally include fugitive emissions, industrial process emissions, and other modes of transportation.

⁴ Based on the emissions inventories conducted for the 11 participating local governments.

About the Sponsor: StopWaste.Org

This Alameda County Climate Protection Project was financially sponsored by StopWaste.Org in an effort to support its member agencies in building a region that is continually progressing toward environmentally and economically sound resource management. StopWaste.Org is a public agency formed in 1976 by a Joint Exercise of Powers Agreement among the County of Alameda, each of the fourteen cities within the county, and two sanitary districts. The agency serves as the Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board. In this dual role StopWaste.Org is responsible for the preparation and implementation of the County Integrated Waste Management Plan and Hazardous Waste Management Plan as well as the delivery of voter approved programs in the areas of waste reduction, recycled product procurement, market development and grants to non-profit organizations, to help the County achieve its 75% waste diversion goal.

Key program areas in which StopWaste.Org provides technical and financial assistance to its member agencies include:

- Business recycling and waste prevention services through the StopWaste Partnership
- Organics programs, including residential and commercial food waste collection and the promotion of Bay-Friendly Landscaping and gardening
- Green building and construction and demolition debris recycling
- Market development
- Education and outreach, including schools recycling.

As is demonstrated in this document, many of StopWaste.Org's program areas dovetail nicely with municipal efforts to reduce greenhouse gas emissions. While the agency's charge to reduce the waste stream in Alameda County may seem external to traditional emissions reduction strategies, it is working closely with ICLEI in an ongoing way to illustrate the emissions benefits of waste reduction and recycling. Indeed, StopWaste.Org and ICLEI have compiled results in this report that show practices such as residential and commercial recycling and composting, buying recycled products, green building and Bay-Friendly Landscaping play an important role in a local government's emission mitigation strategy. In fact, climate change mitigation can be seen as an umbrella under which the agency's programs play a substantial role.

About ICLEI and the Cities for Climate Protection Campaign

ICLEI's mission is to improve the global environment through local action. The Cities for Climate Protection® (CCP) campaign is ICLEI's flagship campaign designed to educate and empower local governments worldwide to take action on climate change. ICLEI provides resources, tools, and technical assistance to help local governments measure and reduce greenhouse gas emissions in their communities and their internal municipal operations.

ICLEI's CCP campaign was launched in 1993 when municipal leaders, invited by ICLEI, met at the United Nations in New York and adopted a declaration that called for the establishment of a worldwide movement of local governments to reduce greenhouse gas emissions, improve air quality, and enhance urban sustainability. The CCP campaign achieves these results by linking climate change mitigation with actions that improve local air quality, reduce local government operating costs, and improve quality of life by addressing other local concerns. The CCP campaign seeks to achieve significant reductions in U.S. greenhouse gas emissions by assisting local governments in taking action to reduce emissions and realize multiple benefits for their communities.

ICLEI uses the performance-oriented framework and methodology of the CCP campaign's 5-Milestones to assist U.S. local governments in developing and implementing harmonized local

approaches for reducing global warming and air pollution emissions, with the additional benefit of improving community livability. The milestone process consists of:

- Milestone 1: Conduct a baseline emissions inventory and forecast
- Milestone 2: Adopt an emissions reduction target
- Milestone 3: Develop a Climate Action Plan for reducing emissions
- Milestone 4: Implement policies and measures
- Milestone 5: Monitor and verify results

Executive Summary

The debate is over. The overwhelming scientific consensus is that human-induced climate change is among the most pressing environmental and social problems facing this generation and those to come.

The time to act is now. Never in the past 1000 years has the planet warmed at a faster rate than during the 20th century, and the most recent decade has been the warmest ever on record. Allowing this trend to continue could result in decreased agricultural output, increased catastrophic weather events such as forest fires, drought and floods and displacement of entire populations due to rising sea levels.

[Jurisdiction] must do its part. Although the United States accounts for a mere 4% of the world's population, it produces 20.4 according to Table No. 1 on page 6 of the world's greenhouse gases. [Jurisdiction] released XXX tons of carbon dioxide equivalent (CO₂e) in [baseline year] and, if steps are not taken to achieve reductions, is projected to emit XX% more in [forecast year]. [Jurisdiction's] total community-wide greenhouse gas emissions in its baseline year are equivalent to the emissions generated by XX number of passenger vehicles. However, on [date resolution to join ICLEI was passed], [Jurisdiction] pledged to take action against this destructive trend by passing a resolution to join more than 230 U.S. local governments and 770 local governments worldwide in ICLEI's Cities for Climate Protection® (CCP) campaign. In so doing, [Jurisdiction] committed to ICLEI's 5-Milestone methodology for combating global warming:

- Milestone 1: Conduct a baseline emissions inventory and forecast
- Milestone 2: Adopt an emissions reduction target
- Milestone 3: Develop a Climate Action Plan for reducing emissions
- Milestone 4: Implement policies and measures
- Milestone 5: Monitor and verify results

The [City/Town/County] of [Jurisdiction] is committed to reducing community-wide greenhouse gas emissions by XX% below our [baseline year] by [target year].

[Jurisdiction's] Climate Action Plan

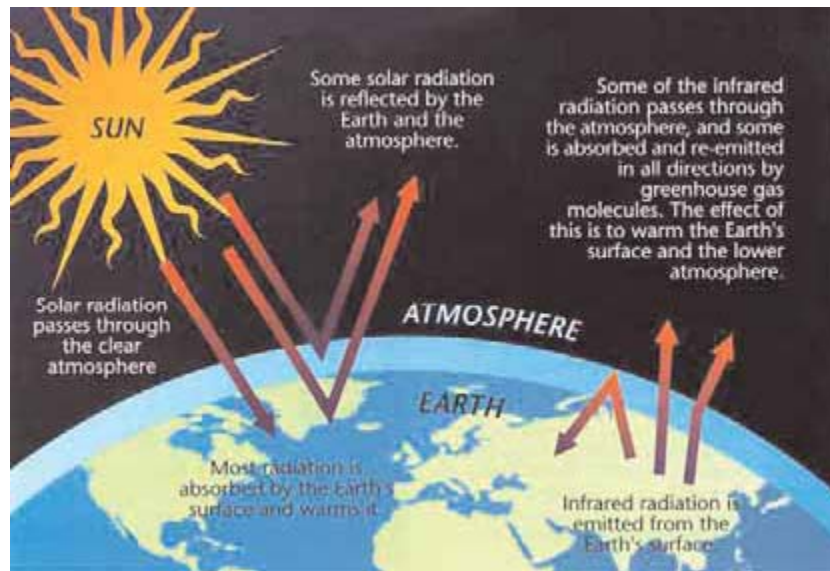
- Provides background on the science and impacts of climate change
- Presents [Jurisdiction's] baseline greenhouse gas emissions inventory and emissions reduction target
- Outlines the policies and measures in the transportation, energy efficiency, renewable energy, and solid waste management sectors that [Jurisdiction] will implement and/or is already implementing to achieve its target
- Presents next steps required to implement the plan

I. Introduction

A. Introduction to Climate Change Science

The Earth's atmosphere is naturally composed of a number of gases that act like the glass panes of a greenhouse, retaining heat to keep the temperature of the Earth stable and hospitable for life at an average temperature of 60°F. Carbon dioxide (CO₂) is the most prolific of these gases. Other contributing gases include methane (CH₄), nitrous oxide (NO₂), ozone (O₃) and halocarbons. Without the natural warming effect of these gases the average surface temperature of the Earth would be around 14°F.

Figure (1) The Greenhouse Gas Phenomenon



Source: US Environmental Protection Agency

However, recently elevated concentrations of these gases in the atmosphere have had a destabilizing effect on the global climate, fueling the phenomenon commonly referred to as global warming. The global average surface temperature increased during the 20th century by about 1°F. According to NASA scientists, the 1990s were the warmest decade of the century, and the first decade of the 21st century is well on track to be another record-breaker. The years 2002, 2003, 2004 and 2005, along with 1998, were the warmest five years since the 1890s, with 2005 being the warmest year in over a century.

Scientific Facts and Projections:

- The atmospheric concentration of carbon dioxide (CO₂) during the last two decades has increased at the rate of 0.4% every year.
- Current CO₂ concentrations are higher than they have been in the last 420,000 years, and according to some research, the last 20 million years.
- About three-quarters of the CO₂ emissions produced by human activity during the past 20 years are due to the burning of fossil fuels.

Source: The Intergovernmental Panel on Climate Change

The climate and the atmosphere do not react in a linear fashion to increased greenhouse gases. That is to say that you cannot simply predict the specific degree of warming that each ton of carbon dioxide emitted from a power plant or a vehicle's tailpipe will cause. The Earth's climate has a number of feedback loops and tipping points that scientists fear will accelerate global warming beyond the rate at which it is currently occurring. For example, as CO₂ emissions have increased in recent human history, the oceans have been absorbing a significant portion of these gases, but as the oceans become more permeated with CO₂, scientists anticipate they will reach a saturation point, after which each ton of anthropogenically emitted CO₂ will have a more substantial impact.⁵ Another example of this compounding can be found in the polar ice caps. Ice is highly reflective and acts effectively like a giant mirror, reflecting the sun's rays back into space. As the planet warms and some of this ice melts away, a darker land or ocean surface is revealed. This darker surface tends to absorb more heat, accelerating the speed at which the planet warms with each ton of greenhouse gas emitted. As these examples illustrate, the stakes are high, and there is no time to lose in the fight against global warming.

B. Effects & Impacts of Climate Change

Global Impacts

In addition to causing an increase in average global surface temperature, rising levels of greenhouse gases have a destabilizing effect on a number of different micro-climates, conditions and systems. According to the Intergovernmental Panel on Climate Change, surface temperatures are on course to increase by between 2.5 and 10.5°F by the year 2100, with regions in the northern parts of North America and Asia heating by 40% above the mean increase.⁶ The increase in the temperature of the oceans is projected to accelerate the water cycle, thereby increasing the severity and rate of both storms and drought, which, along with decreased snow pack, could disrupt ecosystems, agricultural systems and water supplies.

Snow cover has decreased by 10% in the last forty years. Average sea levels have raised between 1/3 and 2/3 of a foot over the course of the 20th century and are projected to rise by at least another 1/3 of a foot and up to almost three feet by the year 2100. These coastal infringements on such a large scale could lead to not only significant environmental and ecosystem disturbances, but also major population displacement and economic upheaval.⁷

Local Impacts:

While climate change is a global problem influenced by an array of interrelated factors, climate change is also a local problem with serious impacts foreseen for California, the Bay Area and [Jurisdiction].

Sea level rise: According to the Union of Concerned Scientists, the sea level in the State of California is expected to rise up to 12 inches of the next hundred years. The Pew Center on Climate Change has reported that this would result in the erosion of beaches, bay shores and river

⁵ Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: "Climate Change 2001: The Scientific Basis."

⁶ Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: "Climate Change 2001: The Scientific Basis."

⁷ Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: "Climate Change 2001: The Scientific Basis."

deltas, marshes and wetlands and increased salinity of estuaries, marshes, rivers and aquifers.⁸ This increased salinity has the potential to damage or destroy crops in low-lying farmlands. Infrastructure at or near sea level, such as harbors, bridges, roads and even the San Francisco International and Oakland International Airports are at risk of damage and destruction.

The San Francisco Bay Area Conservation Commission has modeled the impact of a sea level rise of 3 feet (approx 1 meter) on the San Francisco Bay Area. As shown in Figure (2), areas such as the Oakland Airport would be under water as well parts of Alameda, San Leandro, Hayward, Union City, Fremont and Newark, including sections of Interstate 880.

Figure (2) San Francisco Bay Area Land areas Affected by a 1-meter Sea Level Rise



Source: San Francisco Bay Area Conservation Commission

Natural disasters: Climate models predict a 4°F temperature increase in the next 20 to 40 years, with an increase in the number of long dry spells, as well as a 20-30% increase in precipitation in the spring and fall. More frequent and heavier precipitation cause flooding and mudslides, which would incur considerable costs in damages to property, infrastructure and even human life. Heavy rains during the winter of 2005 offer a glimpse of the potential costly and disruptive effects of such precipitation.

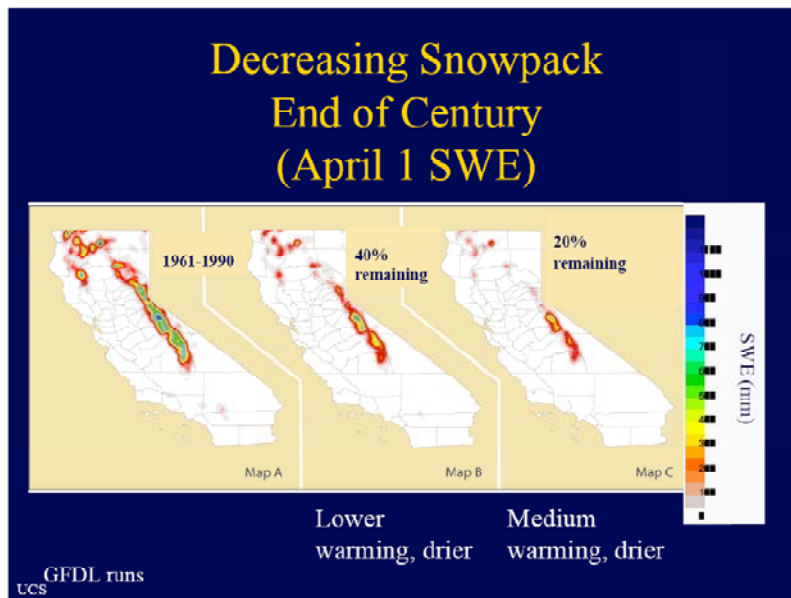
In addition, the increase of wildfires due to continued dry periods and high temperatures is another expected impact of continued climate change. In these conditions, fires burn hotter and spread faster. During 2003, there were 14 reported fires in California which were enhanced due to Santa Ana winds and very low levels of humidity. The estimated damage costs were over \$2 Million.

⁸ Neumann, James E. for the Pew Center on Global Climate Change. "Sea Level Rise & Global Climate Change: A Review of Impacts to the US Coasts." February 2000.

Impacts on water: Water quality and quantity are also at risk as a result of 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 snowpack melts in the spring. Not only does such snow melt increase the threat for spring flooding, it will decrease the Sierras' capacity as a natural water tower, resulting in decreased water availability for agricultural irrigation, hydro-electric generation and the general needs of a growing population.

The decrease in snow-pack is particularly relevant in the State of California and the Bay Area, as the Sierra snow-pack provides approximately 80% of California's annual water supply, and it is the origin of the Tuolumne River, the primary source of water for the San Francisco regional water system. Figure (3) was provided by the Union of Concern Scientists for the California Climate Action Team Report (2006).

Figure (3) Decreasing Snowpack in California



Source: Union of Concern Scientists

Impacts on plants and vegetation: Native plants and animals are also at risk as temperatures rise. Scientists are reporting more species moving to higher elevations or more northerly latitudes in response. Increased temperatures also provide a foothold for invasive species of weeds, insects and other threats to native species. The increased flow and salinity of water resources could also seriously affect the food web and mating conditions for fish that are of both of economic and recreational interest to residents. In addition, the natural cycle of plant's flowering and pollination, as well as the temperature conditions necessary for a thriving locally adapted agriculture could be affected, with perennial crops such as grapes taking years to recover.

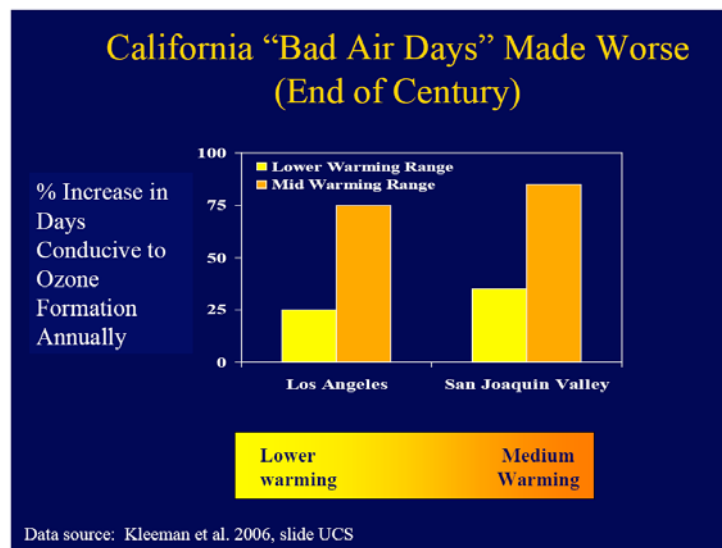
In California, the impacts of climate change on agriculture are estimated to be \$30 billion by the Farm Bureau, mostly due to changes in chill hours required per year for cash crops.

Public health impact: Warming temperatures and increased precipitation can also encourage mosquito-breeding, thus engendering diseases that come with mosquitoes, such as the West Nile Virus, a disease of growing concern in our region. Heat waves are also expected to have a major impact on public health and be a determinant factor of mortality. According to the IPCC (2004), the summer mortality rates will double by half by 2050 due to hot weather episodes.

Increased temperatures also pose a risk to human health when coupled with high concentrations of ground-level ozone and other air pollutants, which may lead to increased rates of asthma and other pulmonary diseases. Furthermore, anticipated increases in the number and severity of hot days place significant portions of the population, particularly the elderly, young, those already sick, and people who work outdoors, at risk for heat-stroke.

The incidence of bad air days in California’s urban areas has increased, mostly in hot summer days. On long, 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 and exceeded the California 1-hour standard for ozone (set at 90 ppb) 18 times.

Figure (4) California Bad Air days



Source: Union of Concern Scientists

Given that climate change has local repercussions and effects on weather, water resources, ecosystems, public health, infrastructural stability and economic vitality, local governments have a vested interest in mitigating the amount of greenhouse gases being produced by their communities.

C. Action Being Taken on Climate Change

International Action

As evidence of climate change has mounted, groups at the international, federal, state and local level have responded with ways to confront the impending threat. The United Nations Framework Convention on Climate Change (UNFCCC) leads international efforts to investigate and combat climate change. Recognizing the problem of potential global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP)

established the Intergovernmental Panel on Climate Change (IPCC) in 1988 to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk associated with human-induced climate change, its potential impacts and options for adaptation and mitigation, releasing its most recent assessment in 2007.⁹

In 1997, 10,000 international delegates, observers and journalists gathered in Kyoto, Japan to participate in the drafting and adoption of the Kyoto Protocol, requiring industrialized nations to reduce their collective greenhouse gas emissions 5.2% below 1990 levels. As of January 2007, 162 countries have ratified the Protocol, with the United States and Australia most notably absent from the list. Additionally, since 1995 the annual Conference of the Parties (COP) has met to discuss action and implementation to combat climate change, with the most recent COP, COP-12, being held in Nairobi in 2006.

State and Federal Action

Though adequate attention and action related to combating climate change has been lacking at the federal level, California has taken significant steps at the state level. California has been leading the charge on combating climate change through legislation:

Senate Bill 1078 Sher, 2002 – Established a Renewable Portfolio Standard requiring electricity providers to increase purchases of renewable energy resources by 1% per year until they have attained a portfolio of 20% renewable resources.

Assembly Bill 1493 Pavley, 2002 – Requires the State Air Resources Board to develop and adopt regulations that achieve the maximum feasible reduction of greenhouse gases from vehicles primarily used for non-commercial transportation by January 2005.

Senate Bill 1771 Sher, 2000 – Requires the California Energy Commission (CEC) to prepare an inventory of the state's greenhouse gas emissions, to study data on global climate change, and to provide government agencies and businesses with information on the costs and methods for reducing greenhouse gases. It also established the California Climate Action Registry to serve as a certifying agency for companies and local governments to quantify and register their greenhouse gas emissions for possible future trading systems.

AB 32 Núñez & Pavley, 2006 – Institutes a mandatory limit on greenhouse gas emissions -- reducing emissions in California to 1990 levels by the year 2020, or 25% below forecasted levels. The bill also directs the California Air Resources Board (CARB) to establish a mandatory reporting system to track and monitor emission levels and requires CARB to develop various compliance options and enforcement mechanisms.

On June 1, 2005, Governor Schwarzenegger signed Executive Order #S-3-05 establishing a greenhouse gas reduction target of reducing emissions to 2000 levels by 2010, to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. In April 2006, the California Climate Action Team released its Report to Governor Schwarzenegger and the State Legislature, outlining recommendations and strategies to achieve those reductions.

Local Action

A great deal of work is being done at the local level on climate change as well. ICLEI—Local Governments for Sustainability has been a leader both internationally and domestically for more than ten years, representing over 770 local governments around the world. ICLEI was launched in the United States in 1995 and has grown to more than 230 cities and counties providing national leadership on climate protection and sustainable development. In June 2006, ICLEI launched the California Local Government Climate Task Force as a formal mechanism to provide ongoing

⁹ Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report: "Climate Change 2007"

input and collaboration into the State of California's climate action process. ICLEI also works in conjunction with the U.S. Conference of Mayors to track progress and implementation of the U.S. Mayors Climate Protection Agreement, launched in 2005, which more than 376 mayors have signed to date pledging to meet or beat the Kyoto Protocol emissions reduction target in their own communities. By the end of 2006, Alameda county mayors from San Leandro Oakland, Pleasanton, Newark, Hayward, Fremont, Dublin, Berkeley, and Albany signed the U.S. Mayors Climate Protection Agreement.

Climate Protection Efforts by the City of []

[This is a place to explain the concerns your jurisdiction has had with climate change and what programs the city has implemented, at both municipal operations and the community. It may be helpful to cite the relevant city departments as well as external organizations that may be involved in implementation]

II. Emissions Inventory

A. Reasoning, Methodology & Model

The *[City/Town/County]* of *[Jurisdiction's]* inventory was conducted by ICLEI in partnership with staff from the municipality. The purpose of the baseline emissions inventory is to determine the levels of greenhouse gas emissions that *[Jurisdiction]* emitted in its base year, *[base year]*.

ICLEI's Cities for Climate Protection inventory methodology allows local governments to systematically estimate and track greenhouse gas emissions from energy and waste related activities at the community-wide scale and those resulting directly from municipal operations. The municipal operations inventory is a subset of the community-scale inventory.

Once completed, these inventories provide the basis for creating an emissions forecast and reduction target, and enable the quantification of emissions reductions associated with implemented and proposed measures.

1. ICLEI's Emissions Analysis Software

To facilitate local government efforts to identify and reduce greenhouse gas emissions, ICLEI developed the Clean Air and Climate Protection (CACP) software package with Torrie Smith Associates. This software estimates emissions derived from energy consumption and waste generation within a community. The CACP software determines 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 CO₂e. 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 CO₂e.

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. EPA's Waste Reduction Model (WARM).

The CACP software has been and continues to be used by over 250 U.S. local governments to reduce their greenhouse gas emissions. However, it is worth noting that, although the software provides *[Jurisdiction]* with a sophisticated and useful tool, calculating emissions from energy use with precision is difficult. The model depends upon numerous assumptions, and it is limited

by the quantity and quality of available data. With this in mind, it is useful to think of any specific number generated by the model as an approximation rather than an exact value.

2. Inventory Data Sources and Creation Process

An inventory of greenhouse gas emissions requires the collection of information from a variety of sectors and sources. For community electricity and natural gas data, ICLEI consulted Pacific Gas & Electric Company (PG&E) and Alameda Power & Telecom¹⁰. The Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), and Bay Area Rapid Transit (BART) served as sources of transportation data. Solid waste data was gathered from StopWaste.Org, Waste Management, Inc., Alameda County Industries, Republic Services, Inc. and the U.S. Environmental Protection Agency (U.S. EPA). [City/Town/County] staff, including [name staff here] were instrumental in providing data on municipal operations.

These data were entered into the software to create a community emissions inventory and a municipal emissions inventory. The community inventory represents all the energy used and waste produced within [Jurisdiction] and its contribution to greenhouse gas emissions. The municipal inventory is a subset of the community inventory, and includes emissions derived from internal government operations.

There are two main reasons for completing separate emissions inventories for community and municipal operations. First, the government is committed to action on climate change, and has a higher degree of control to achieve reductions in its own municipal emissions than those created by the community at large. Second, by proactively reducing emissions generated by its own activities, the [Jurisdiction] government takes a visible leadership role in the effort to address climate change. This is important for inspiring local action in [Jurisdiction], as well as for inspiring other communities.

[Jurisdiction’s] inventory is based on the year 200X. When calculating [Jurisdiction’s] emissions inventory, all energy consumed in [Jurisdiction] was included. This means that, even though the electricity used by [Jurisdiction] residents is produced elsewhere, this energy and emissions associated with it appears in [Jurisdiction]’s inventory. The decision to calculate emissions in this manner reflects the general philosophy that a community should take full ownership of the impacts associated with its energy consumption, regardless of whether the generation occurs within the geographical limits of the community.

B. Inventory Results

Alameda County Results

The results for the Alameda County GHG emissions inventory are shown in the following table (1) and figure (5) :

| GHG Emissions Community Inventory Alameda County, CA¹ | Total CO₂e short tons/year |
|---|--|
| | Baseline year ² |

¹⁰ Exclusively for the City of Alameda

Table (2) GHG Inventory Alameda

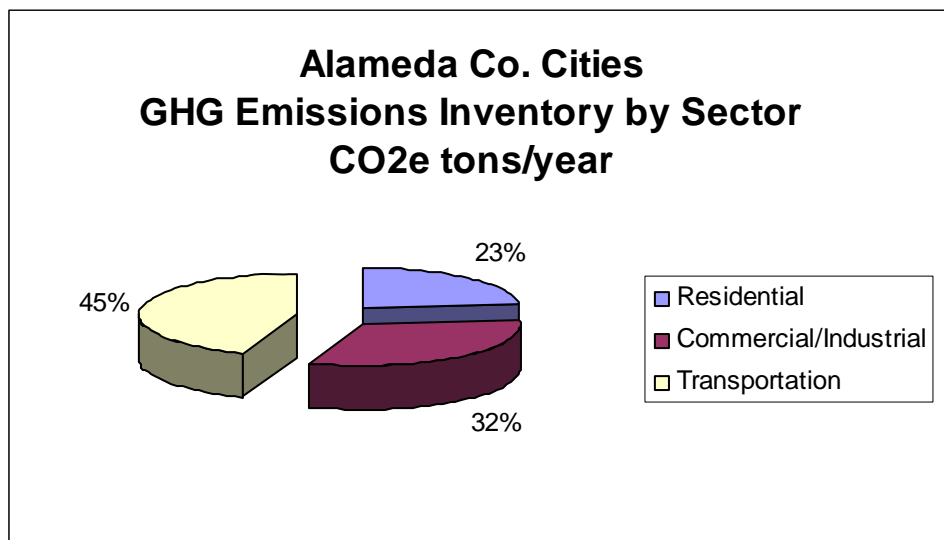
| | |
|---|------------------|
| Residential | 1,316,481 |
| Commercial/Industrial | 1,853,776 |
| Transportation | 2,540,136 |
| TOTAL | 5,710,393 |
| Households | 356,707 |
| Population | 974,905 |
| PERCAPITA GHG Emissions (Per capita CO ₂ e tons/year) | 5.86 |

Emissions Results in County

¹ The above data includes 10 cities (Alameda City, Albany, Berkeley, Emeryville, Hayward, Newark, Oakland, Piedmont, San Leandro and Union City).

² The Baseline year is 2005 for all cities, except for Albany and Emeryville which inventoried 2004 emissions. For the presentation of results, data for all cities is included.

Figure (5) GHG Emissions Inventory Results in Alameda County



Source: CACP output

Table (2) and Figure (5) above shows the County's total greenhouse gas emissions from all major sources for the year 2005. The year 2005 was the baseline for all cities except for Albany and Emeryville. The County of Alameda is emitting approximately 5,710,393 tons of CO₂e from the residential, commercial/industrial, and transportation sectors. Burning fossil fuels in vehicles and for energy use in buildings and facilities is a major contributor to the County's greenhouse gas emissions. Fuel consumption in the transportation sector is the single largest source of emissions, contributing 44% of total emissions. The residential and commercial/industrial sectors represent emissions that result from electricity and natural gas used in both private and public sector buildings and facilities.

[Jurisdiction] Results

The results below represent the *[Jurisdiction's]* completion of the first milestone of ICLEI's CCP campaign.

1. Community Emissions Inventory

[Insert the baseline community emissions inventory report provided by ICLEI staff]

2. Municipal Emissions Inventory

[Insert the baseline municipal emissions inventory report provided by ICLEI staff]

III. Forecast for Greenhouse Gas Emissions

[Insert forecast calculations and report provided by ICLEI staff]

IV. Greenhouse Gas Emissions Reduction Target

A reduction target provides a tangible goal for *[Jurisdiction's]* emissions reduction efforts. Our emissions reduction target represents a percentage by which the community aims to decrease emissions, below the *[year]* baseline, by *[target year]*.

Many factors were considered when selecting *[Jurisdiction's]* reduction target. We strove to choose a target that is both aggressive and achievable given local circumstances. *[Describe those factors here. The following text may or may not apply to your consideration of a target. Also describe who was involved in the target selection process.]*

The Kyoto Protocol target of 7% below 1990 levels was the target the United States agreed to in principle at the 1997 United Nations Council of Parties meeting, but has yet to ratify in Congress. Several European nations set similar goals and some have begun action towards meeting them. IPCC research suggests that we would need to achieve as much as a 60% reduction below 1990 levels in order to reverse global warming and stabilize the climate.

Local factors considered in selecting the target reduction percentage included estimation of the effects of implemented and planned programs and policies, an approximate assessment of future opportunities to reduce emissions, targets adopted by peer communities, and emissions reductions expected to be achieved by state-level climate policy. *[Jurisdiction]* has adopted a reduction target of X percent below *[base year]* by the year 20XX. To reach this target, *[Jurisdiction]* must reduce annual emissions by *[number]* tons from baseline levels.

Table (): *[Jurisdiction]* Emissions Summary

| <i>[Jurisdiction]</i> Emissions Summary <i>[Populate table with numbers from inventory output from CACP software]</i> | | |
|---|--------------------|-------------------------------|
| | Community Analysis | Municipal Operations Analysis |
| Base year | | |
| Quantity of CO ₂ e emissions in base year (tons) | | |
| Target year | | |
| Business-as-usual projection of CO ₂ e emissions in <i>[target year]</i> (tons) | | |
| Percent CO ₂ e reduction targeted by target year relative to base year (%) | | |
| Quantity of CO ₂ e reduction targeted relative to base year (tons) | | |

Source: CACP Model Output

V. Existing Emissions Reduction Measures & Policies

At both the community-scale and within municipal operations, [Jurisdiction] is already undertaking a number of programs, policies and projects that result in reduced greenhouse gas emissions. While the goals of many of the existing actions listed below (e.g., reducing local air pollution, reducing traffic, improving public health, increasing energy efficiency and conservation, improving solid waste management) is not necessarily to reduce greenhouse gas emissions, the policies do serve that function. Ultimately, the goal of [Jurisdiction's] Climate Action Plan is to build on existing planning and implementation efforts and integrate them into the broader task of reducing the community's impact on climate.

[Jurisdiction's] existing actions are organized into four categories: transportation, energy efficiency, renewable energy, and solid waste management¹¹. These categories follow the major sources of emissions found in the GHG emissions inventories and described in Section IIB in addition to the waste sector.

A. Existing Community-Scale Measures

The measures outlined in this section represent an excellent first step towards significant reductions of greenhouse gas emissions in the community. According to estimates produced using the CACP software, these measures already account for [number] tons CO₂e reduction, or [number] percent towards [Jurisdiction's] ultimate reduction goal. They have been broken down by sector and are outlined below. [Use the table below to highlight the benefits of existing community-scale policies and programs. Insert names of existing measures under the appropriate sectors in the "Policy" column and fill out the remainder of the table with the information requested at the top of each additional column. ICLEI staff will provide on-demand assistance in using the CACP software to quantify the benefits of your jurisdiction's policies and programs.]

Table (): Existing Community Greenhouse Gas Emissions Reduction Measures

| Policy | Year Initiated | Annual CO ₂ e Reduction by 20XX (tons) | Contribution to Emissions Reduction Target (%) | Project Lead |
|-------------------------------|----------------|---|--|--------------|
| Transportation | | | | |
| Measure name | XXXX | # | % | |
| Energy Efficiency | | | | |
| Measure name | XXXX | # | % | |
| Renewable Energy | | | | |
| Measure name | XXXX | # | % | |
| Solid Waste Management | | | | |
| Measure name | XXXX | # | % | |
| Total reduction | | | | |

Source: CACP Model output

¹¹ Waste Management is used in the broader sense to include, waste reduction, recycling, composting and final disposal activities.

[Consider writing a brief paragraph on each significant measure, providing additional detail on the amount of energy savings or waste reduction achieved, the year, location and drivers of implementation, etc. These paragraphs will help all members of the community to communicate and celebrate past accomplishments and conceive of new emissions reduction opportunities.]

B. Existing Municipal Operations Measures

[Jurisdiction] has also already undertaken a number of municipal operations measures resulting in reduced greenhouse gas emissions relative to the base year of [year]. These measures are an excellent first step towards significant reductions of greenhouse gas emissions from municipal operations. According to estimates produced using the CACP software, these measures already account for [number] tons CO₂e reduction, or [number] percent towards [Jurisdiction's] ultimate municipal operations reduction goal. They have been broken down by sector and are outlined below. [Use the table below to highlight the benefits of existing municipal policies and programs. Insert names of existing measures under the appropriate sectors in the "Policy" column and fill out the remainder of the table with the information requested at the top of each additional column. ICLEI staff will provide on-demand assistance in using the CACP software to quantify the benefits of your jurisdiction's policies and programs.]

Table (): Existing Municipal Greenhouse Gas Emissions Reduction Measures

| Policy | Year Initiated | Annual CO ₂ e Reduction by 20XX (tons) | Contribution to Emissions Reduction Target (%) | Project Lead |
|-------------------------------|----------------|---|--|--------------|
| Transportation | | | | |
| Measure name | XXXX | # | % | |
| Energy Efficiency | | | | |
| Measure name | XXXX | # | % | |
| Renewable Energy | | | | |
| Measure name | XXXX | # | % | |
| Solid Waste Management | | | | |
| Measure name | XXXX | # | % | |
| Total reduction | | | | |

Source: CACP Model output

[Consider writing a brief paragraph on each significant measure, providing additional detail on the amount of energy savings or waste reduction achieved, the year, location and drivers of implementation, etc. These paragraphs will help all members of the community to communicate and celebrate past accomplishments and conceive of new emissions reduction opportunities.]

C. Summary of Existing Emissions Reduction Measures

Based on the emissions reductions already achieved since [base year] through the above measures, [Jurisdiction] will have to reduce X tons of CO₂e emissions in the community, including at least Y tons of CO₂e emissions from municipal operations, in order to achieve our emissions reduction target.

Table () : [Jurisdiction] Emissions Summary

| [Jurisdiction] Emissions Summary [Populate table with numbers from inventory output from CACP software.] | |
|--|---|
| | Community Analysis Municipal Operations Analysis |
| Base year | |
| Quantity of CO ₂ e emissions in base year (tons) | |
| Target year | |
| Business-as-usual projection of CO ₂ e emissions in [target year] (tons) | |
| Percent CO ₂ e reduction targeted by target year relative to base year (%) | |
| Quantity of CO ₂ e reduction targeted relative to base year (tons) | |
| Quantity of CO ₂ e reduction achieved to date (tons) | |
| Percent of CO ₂ e reduction target achieved to date (%) | |
| Quantity of CO ₂ e reduction pending to reach target (tons) | |

Source: CACP Model Output

VI. Proposed Emissions Reduction Measures & Policies

Based on careful consideration of the emissions reductions needed to achieve our stated targets, the distribution of emissions revealed in our emissions inventory, existing priorities and resources, and the potential costs and benefits of various potential emissions reduction projects, [Jurisdiction] has identified a set of emissions reduction measures that should be set into motion immediately. The actions are divided into the following sectors/measure types: transportation, energy efficiency, renewable energy, and solid waste management¹². Within each of these categories, the measures are further divided into the measures that affect community-wide emissions and measures that affect the emissions that result from municipal operations.

The emissions that result from municipal facilities and operations account for only X percent of [Jurisdiction’s] community-wide emissions. That being said, measures taken to reduce municipal emissions show that the city’s elected officials and staffers are committed to action on climate change and to inspiring action in both our community and neighboring communities. [Jurisdiction] is proud of the emissions reduction efforts implemented to date and is committed to building on those efforts by increasing fleet fuel efficiency, reducing solid waste, and increasing energy efficiency and conservation in municipal buildings. .

¹² Waste Management is used in the broader sense to include, waste reduction, recycling, composting and final disposal activities.

[This is a good section in which to give more detail on proposed measures—their context, implementation process, cost and benefits (i.e. resource savings, emissions reductions, co-benefits, needed funding), resource requirements and availability, projected timeline, foreseeable barriers potential stakeholders to involve, etc.]

[To assist your jurisdiction in implementing a set of measures that will achieve the targeted reduction in a resource and cost effective manner, ICLEI staff has prepared an analysis of the potential emission reductions achieved by implementing programs offered by StopWaste.Org as well as various other policies and programs. Please see example measures below.]

1. Transportation and Land Use Measures

Broadly, there are three main ways to reduce GHG emissions from the transportation sector. One way is to implement policies that reduce dependence on personal motor vehicles and encourage alternative modes of transportation, such as public transit, cycling, and walking. Another way is to utilize vehicles that release fewer greenhouse gases, such as hybrids, more fuel efficient vehicles, and vehicles that run on alternative fuels. A final way is to encourage ‘smart growth’ or policies that promote efficient land use development. Smart growth reduces the need to travel long distances, facilitates transit and other non-automotive travel, increases the availability of affordable housing, employs existing infrastructure capacity, promotes social equity, helps protect natural assets, and maintains and reinforces existing communities.

1.1 Community Measures

Table (): Proposed Community Transportation Emissions Reduction Measures

| Transportation Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|--|----------------------|---|
| <i>Vehicle Fuel Efficiency</i> | | |
| ▪ Promote community purchases of compact and hybrid vehicles | | |
| ▪ Initiate a “vehicle buy back” program for passenger cars produced before 1985 | | |
| ▪ Implement and promote the Clean Air Vehicles Program of the BAAQMD | | |
| ▪ Lobby for increased CAFE standards | | |
| ▪ Lobby for tiered vehicle registration fees based on vehicle fuel efficiency | | |
| ▪ Implement tiered parking rates based on vehicle size | | |
| ▪ Encourage BART and AC Transit to use more efficient vehicles | | |
| <i>Alternative Fuels</i> | | |
| ▪ Initiate a community biodiesel purchasing co-op or fueling station | | |
| ▪ Utilize electric and/or hybrid vehicles in municipal fleet | | |
| ▪ Promote the use of alternative fuels/less carbon intensive fuels (CNG, ethanol, act) | | |
| ▪ Encourage alternative fueled vehicles for taxis and school | | |

| | |
|---|--|
| buses | |
| <i>Trip Reduction/ Transportation Demand Management</i> | |
| <ul style="list-style-type: none"> ▪ Promote carpooling, telecommuting and the use of mass transit by community members | |
| <ul style="list-style-type: none"> ▪ Expand local transit, bus, and or shuttle service in range and/or frequency | |
| <ul style="list-style-type: none"> ▪ Provide high school students with complimentary bus tickets | |
| <ul style="list-style-type: none"> ▪ Improve traffic signal synchronization | |
| <ul style="list-style-type: none"> ▪ Increase the number of miles of HOV lanes | |
| <ul style="list-style-type: none"> ▪ Charge a tiered congestion fee based on vehicle fuel efficiency | |
| <ul style="list-style-type: none"> ▪ Partner with City Car Share or a similar car sharing program to disincentivize car ownership | |
| <ul style="list-style-type: none"> ▪ Encourage infill, brownfield, and downtown development in order to reduce trips by car and make existing public transit more accessible | |
| <i>Alternative modes of transportation</i> | |
| <ul style="list-style-type: none"> ▪ Promote bicycling | |
| <ul style="list-style-type: none"> ▪ Promote walking and facilitating connections and crosses | |
| <ul style="list-style-type: none"> ▪ Encourage school walking pool | |
| <ul style="list-style-type: none"> ▪ Developing a regional rail plan | |
| <ul style="list-style-type: none"> ▪ Supporting inter-regional high speed rail | |
| <ul style="list-style-type: none"> ▪ Canceling highway widening projects | |
| <i>Land use related</i> | |
| <ul style="list-style-type: none"> ▪ Support transit oriented development | |
| <ul style="list-style-type: none"> ▪ Support high density housing near BART (Bay Area Rapid Transit) | |
| <ul style="list-style-type: none"> ▪ Change zoning to encourage higher density housing and mixed use development in areas close to BART | |
| <ul style="list-style-type: none"> ▪ Encourage more smart growth (in fill, TOD, jobs/housing balance, centered development) | |
| <ul style="list-style-type: none"> ▪ Discouraging development and transportation investments in areas subject to sea level rise | |
| <ul style="list-style-type: none"> ▪ Integrating rail, bus and bicycle networks | |
| <ul style="list-style-type: none"> ▪ Providing more free shuttles, particularly in downtown areas to encourage high density development | |
| <ul style="list-style-type: none"> ▪ Participate in ABAG's Smart Growth Strategy | |

Any jurisdiction can use the ABAG's Smart Growth Checklist as criteria to consider in land use project approval. The check list is attached as Appendix C.

[The Association of Bay Area Governments has a Smart Growth Strategy as part of their Regional Livability Footprint Project. ICLEI and StopWaste.Org encourage jurisdictions to approach ABAG and participate on their main programs: technical sessions, corridors program and incentives & regulatory changes.

<http://www.abag.ca.gov/planning/smartgrowth/index.html>

1. 2 Municipal Operations Measures

Table (): Proposed Municipal Transportation Emissions Reduction Measures

| Transportation Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|--|----------------------|---|
| <i>Vehicle Fuel Efficiency</i> | | |
| ▪ Retire old and under used vehicles | | |
| ▪ Purchase hybrids and/or smaller, more fuel efficient fleet vehicles | | |
| ▪ Utilize fuel efficient vehicles (e.g., scooters) for parking enforcement | | |
| ▪ Replace retired vehicles with hybrids provided by City Car Share | | |
| <i>Alternative Fuels</i> | | |
| ▪ Utilize alternative fuels in city fleet and heavy equipment | | |
| ▪ Implement a “cops on bikes” program | | |
| <i>Alternatives Modes of Transportation</i> | | |
| ▪ Giving greater priority to non-automobile modes in the regional transportation plan | | |
| ▪ Implementing ‘streets supporting’ all travel modes | | |
| <i>Trip Reduction/Transportation Demand Management</i> | | |
| ▪ Promote carpooling, and the use of mass transit by municipal employees | | |
| ▪ Encourage municipal employees to walk to nearby meetings and facilities | | |
| ▪ Allow flex time and telecommuting by municipal employees. Implement employer trip reduction ordinances | | |
| <i>Land Use</i> | | |
| ▪ Connecting transportation funding directly to smart-growth initiatives | | |
| ▪ Locating context-setting and highly symbolic public facilities (e.g. public sport stadiums) with greater regard to multi-modal accessibility | | |

1.3 Example Community and Municipal Transportation Measures

1.3.1 Discourage Unnecessary Idling (Vehicle Efficiency):

Importance/Context – Idling burns fuel to get you nowhere. Burning gasoline or diesel in vehicles releases greenhouse gas emissions as well as local air pollutants. Idling also causes needless engine wear. But local governments have the power to reduce idling through public

education and enforcement of anti-idling ordinances. In addition to saving fuel costs and reducing emissions, anti-idling policies protect public health. Exhaust from cars and buses can enter buildings and vehicles, contributing to respiratory problems.

Implementation Scenario – The best ways to reduce idling in the community include public education and implementing a community-wide anti-idling ordinance. Public service announcements on radio, TV, and on local government websites are effective. Targeted outreach to places where buses are most likely to wait while passengers load and unload, such as hotels, tourist destinations and schools, is also effective. More regulatory action can be taken by passing an anti-idling ordinance that restricts idling of all non-emergency vehicles to no more than three minutes.

The costs of implementation are small, as the anti-idling ordinance can be enforced as part of daily parking and traffic control efforts. Outreach to community members will require some additional cost and staff time.

Many jurisdictions have extensive experience implementing anti-idling projects. ICLEI is a good clearing house for such information and can assist in networking with other communities. In addition, the U.S. EPA offers an entire website on anti-idling at <http://www.epa.gov/cleanschoolbus/antiidling.htm>.

The U.S. EPA provides grants for school bus retrofits and replacements. The EPA also lists additional potential funding sources at the following site: <http://www.epa.gov/cleanschoolbus/funding.htm>.

Resource Savings – Reducing idling saves businesses, public institutions and residents in fuel costs. Typical school buses burn about a half gallon of fuel per hour of idling. If 100 school buses each reduced idling by only 1 hour per month, the fleet would collectively save 600 gallons of fuel per year. At \$2.50 a gallon this equals a cost savings of \$1,500 annually.

Emissions Reductions – Reducing fuel consumption by reducing idling also reduces emissions. The benefits of not burning 600 gallons of fuel per year include an annual reduction of 6 tons of CO₂e, 193 pounds of nitrogen oxides, and 44 pounds of sulfur oxides.

1.3.2 Increase Bicycling as an Alternative to Driving (Alternative Modes of Transportation)

Importance/Context – Pedal power is a clean source of energy that does not produce greenhouse gas emissions. But lack of adequate bike infrastructure is a major barrier to cyclists. Providing and promoting a convenient and safe bike infrastructure serves to reduce trips by motor vehicles. Bicycles are especially appropriate in reducing the number of short trips—up to 5 miles—which constitute more than half of all driving.

Shifting trips from cars to bikes also reduces street traffic. An investment in bike infrastructure is also an investment in public health, as cycling is an excellent mode of physical activity. A fit community has lower health care costs.

Implementation Scenario – There are a number of different ways to increase the rate of bicycling in the community. These include:

- Increasing the number of bicycle lanes, routes, and paths
- Requiring developers to provide bicycle parking racks/stations
- Increasing the marketing and promotion of bicycling as an alternative to driving through expanded advertising, promoting “Bike to Work Week,” and making bike lane maps available at various locations throughout the community

Potential sources of funding for this effort include the Bay Area Air Quality Management District (BAAQMD), the Metropolitan Transportation Commission (MTC), and the Federal Transportation Authority. The East Bay Bicycle Coalition is a major stakeholder for bicycle-

related policy. Other major stakeholders that need to have early input are the jurisdiction’s planners and Office of Transportation. Many Bay Area jurisdictions have extensive experience implementing projects that increase bicycling within the community. ICLEI is a clearing house for such information and can assist the jurisdiction to network with other communities.

Emissions Reductions – If commuters cumulatively shifted 10,000 vehicle miles traveled (VMT) by passenger vehicle to bicycle, the annual greenhouse gas emissions savings would equal approximately 6 tons of CO₂e.

1.3.2 Convert the municipal fleet to biodiesel (Alternative Fuels).

Importance/Context – B100 is biodiesel derived from 100 percent vegetable oil or animal fats. It can be used to replace conventional diesel fuel and significantly reduces greenhouse gas emissions. Biodiesel is also available in blends such as B20 (20 percent biodiesel). B20 is more common because of the higher cost of biodiesel and engine compatibility issues. Biodiesel can be used in vehicles from cars and light trucks, to fire engines and heavy dump trucks.

Implementation Scenario – Convert 10 city-owned heavy trucks to B100 biodiesel. Converting the municipal fleet to an alternative fuel such as biodiesel reduces the consumption of fossil fuels. Shifting to B100 achieves significant reductions in local air pollutants such as particulate matter and volatile organic compounds. Biodiesel is also non-toxic and biodegrades four times faster than conventional diesel. However, biodiesel can be up to twice as expensive as conventional diesel. Establishing a local supply will reduce this cost.

Potential sources of funding for this effort include the Bay Area Air Quality Management District (BAAQMD), the Metropolitan Transportation Commission (MTC), and the Federal Transportation Authority.

Emissions Reductions – Converting 10 city-owned heavy trucks to B100 biodiesel would reduce emissions by approximately 190 tons annually.

2. Energy Efficiency Measures

Increasing energy efficiency throughout the community has immense potential to both reduce greenhouse gas emissions and save people money. A wealth of resources exists to assist municipalities in this regard. ENERGY STAR, for example, offers local governments energy efficient products and tools for improving energy management. Promoting ENERGY STAR resources to both businesses and residents is a good way to achieve increased energy efficiency. Other methods to increase community energy efficiency include subsidizing energy management services such as energy audits for residents and businesses. Ensuring that developers and building contractors are trained on energy conservation and efficiency is also within a city’s power to do.

2.1 Community

Table (): Proposed Community Energy Efficiency Emissions Reduction Measures

| Energy Efficiency Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|---|----------------------|---|
| <i>Energy Star light fixtures and CFL’s</i> | | |
| <ul style="list-style-type: none"> • Adopt residential and commercial energy code requirements | | |

| |
|--|
| <ul style="list-style-type: none"> • Implement residential and commercial energy conservation ordinances |
| <ul style="list-style-type: none"> • Implement a low-income weatherization program |
| <ul style="list-style-type: none"> • Promote the purchase of ENERGY STAR appliances |
| <ul style="list-style-type: none"> • Promote water conservation through technological and behavioral modification |
| <ul style="list-style-type: none"> • Install energy efficient cogeneration power production facilities |
| <ul style="list-style-type: none"> • Support and enforce green building ordinances |
| <ul style="list-style-type: none"> • Establish a revolving energy fund to provide initial capital for new energy efficiency retrofit projects |

Source: CACP Model output

2.2 Municipal Operations

Table (): Proposed Municipal Energy Efficiency Emissions Reduction Measures

| Energy Efficiency Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|---|----------------------|---|
| <ul style="list-style-type: none"> • Set targets for reducing municipal energy consumption in buildings (e.g., 20 percent reduction in energy consumption by 2015) | | |
| <ul style="list-style-type: none"> • Conduct energy retrofits in municipal buildings | | |
| <ul style="list-style-type: none"> • Adopt an energy efficiency procurement norm for the jurisdiction purchasing | | |

Source: CACP Model output

2.3 Example Community and Municipal Energy Efficiency Measures

2.3.1 Promote the Purchase of ENERGY STAR light fixtures and compact fluorescent light bulbs (CFLs)

Importance/Context – Residents can save significant amounts of money and energy by installing light bulbs and light fixtures that have earned the ENERGY STAR. Such energy efficient lighting requires at least 65 percent less energy than incandescent lighting, generates 70 percent less heat, and last up to 10 times longer. On average, an ENERGY STAR qualified light bulb can save up to \$30 in electricity costs over the lifetime of the bulb.¹³ When residents install ENERGY STAR lighting they are also reducing greenhouse gas emissions by using less energy at home.

Implementation Scenario – ENERGY STAR’s “Change a Light, Change the World” campaign is a national challenge through which [Jurisdiction] will encourage its citizens to take small, simple steps toward increased energy efficiency. Championing the ENERGY STAR “Change a Light, Change the World” campaign would cost the jurisdiction little while serving to save residents money and reducing emissions at the same time. As a jurisdiction, [Jurisdiction] will set a pledge goal of getting at least 1,000 community members to pledge to replace at least one incandescent

¹³ Source: http://www.energystar.gov/ia/partners/promotions/change_light/downloads/MayorToolkit.pdf

bulb at home with a more energy efficient one. [Jurisdiction] can follow its progress toward its pledge goal by encouraging community members to log their pledges online at www.energystar.gov/joinCAL.

Additional steps that the jurisdiction will take to encourage its citizens to switch to more energy efficient bulbs include: hosting a public event at the library at which all the building's incandescent bulbs will be changed to ENERGY STAR qualified ones; inviting local schools and universities to make pledges; and posting a link to the ENERGY STAR Change a Light pledge on the jurisdiction's website.

Emissions Reductions – On average, an ENERGY STAR qualified light bulb can reduce emissions by 450 pounds over its lifetime. If [Jurisdiction] reaches its goal and at least 1,000 community members commit to changing just one bulb, the emissions reduction achieved will equal approximately 225 CO₂e tons.

2.3.2 Conduct energy efficiency retrofits of municipal buildings.

Importance/Context – Up to one third of the energy used to run typical government buildings goes to waste. This translates into a significant amount of taxpayer money that is wasted due to inefficient energy use. It is for this reason that government buildings are good candidates for energy efficiency retrofits that save the jurisdiction money, reduce maintenance burdens, improve comfort, and reduce greenhouse gas emissions. Cost savings will begin to accrue immediately due to reduced electricity and natural gas consumption. Building retrofits also reduce the emissions of air pollution such as particulate matter, nitrogen oxides and volatile organic compounds.

Implementation Scenario – Retrofit the 10 most energy inefficient buildings by updating or installing new heating, ventilation and cooling systems that are digitally controlled and easy to operate; installing ENERGY STAR qualified lighting and motion sensors; and improving the buildings' insulation. Use the U.S. EPA's Portfolio Manager software program to monitor the energy performance of buildings in your jurisdiction. Portfolio Manager is a free online tool for tracking and benchmarking the energy performance of a jurisdiction's buildings, and can lead to buildings getting rated ENERGY STAR by the EPA.

The jurisdiction has the option of selling bonds to finance the retrofits and using the energy savings to pay back the bonds. ENERGY STAR provides valuable information on financing government energy projects at:

www.energystar.gov/index.cfm?c=government.bus_government.

Cash incentives are available to help offset or completely cover the cost of energy upgrades in public buildings in most cities. The Association of Bay Area Governments (ABAG) has set up a web portal, ABAG Energy Watch that links cities with resources and rebates. Many of the programs are free and offer rebates, comprehensive energy audits, and retro-commissioning services. Take advantage of these programs before they expire in 2008.

www.abag.ca.gov/abagenergywatch/

Emissions Reductions – The emissions reduction achieved through energy efficiency retrofits will vary, but promise to be significant. A savings of one million kWh reduces emissions by over 245 tons CO₂e. For every 1,000 therms of natural gas that is saved, the jurisdiction is achieving an emissions reduction of 6 tons CO₂e.

3. Renewable Energy Measures

Currently available sources of renewable energy include solar, wind, biomass and geothermal. Hydrogen fuel cells and tidal current power are renewable energy sources that hold promise but require further research and innovation before they are as practical and possible to implement as other options.

Renewable energy sources offer the potential for a clean, decentralized energy source that can significantly impact the municipality’s greenhouse gas emissions. [Jurisdiction] will work to build on current efforts to integrate alternative energy into the community’s power scheme.

3.1 Community

Table (): Proposed Community Renewable Energy Emissions Reduction Measures

| Renewable Energy Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|---|----------------------|---|
| <ul style="list-style-type: none"> Study the feasibility of installing small-scale wind turbines to augment commercial and residential energy supply | | |
| <ul style="list-style-type: none"> Offer incentives for the installation of solar hot water heaters and solar pool heaters | | |

Source: CACP Model output

3.2 Municipal Operations

Table (): Proposed Municipal Renewable Energy Emissions Reduction Measures

| Renewable Energy Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|---|----------------------|---|
| <ul style="list-style-type: none"> Install solar photovoltaic systems in public buildings | | |
| <ul style="list-style-type: none"> Consider alternative energy generation options (e.g., solar and wind) in any future municipal buildings | | |
| <ul style="list-style-type: none"> Adopt a green building/bay-friendly ordinance for new and existing municipal buildings | | |
| <ul style="list-style-type: none"> Purchase green tags/renewable energy certificates | | |

Source: CACP Model output

3.3 Example Community and Municipal Renewable Energy Measures

3.3.1 Offer incentives and financing information for solar photovoltaic projects

Importance/Context – Solar photovoltaic (PV) systems generate energy by harnessing sunlight. Technologies that can convert solar energy into electricity can be installed at the point of use. Solar energy is a clean source of electricity that does not produce greenhouse gas emissions.

Installing PV panels on homes can also save residents money by offsetting the need for power from the grid, and increase local energy security and reliability.

Cost savings will begin to accrue after a payback period of 10-15 years. Other benefits include reduced emissions of criteria air pollutants from power plants, development and local demonstration of renewable energy technology, and increased residential energy reliability, security, and cost certainty. Further, while a PV system will not increase a resident's property taxes, it will increase the property value.

Implementation Scenario – Launch a “[Jurisdiction] Solar Program” that serves to provide background information on solar PV systems, financing resources, information on rebates and incentives, and information on solar contractors. Work to eliminate barriers to residential and business solar installations, by offering information at building permit counters, expediting or streamlining permitting requirements, and reducing or eliminating permitting fees. Roll out a consumer awareness campaign to demystify the process for installing solar energy on rooftops. Target new home buyers, realtors, lenders, business owners, and current homeowners.

PV panel installations cost \$7-10 per Watt, depending on system size and availability of product. Local and state rebates, incentives, and tax credits will reduce this cost for residents by at least 30 percent. Businesses can benefit even more from tax credits and accelerated depreciation of the PV system cost. The California Solar Initiative (<http://www.gosolarcalifornia.ca.gov/>) provides rebates and information for small and large solar systems. Also see the Database of State Incentives for Renewables and Efficiency (DSIRE) at <http://www.dsireusa.org/>.

Emissions Reductions – For every kW of installed capacity, PV panels can generate approximately 2,000 kWh of electricity per year. This represents X percent of the average annual electricity consumption of a household in [Jurisdiction].

For every kW of installed capacity, PV-generated electricity savings translate to an annual emissions reduction of about 0.5 ton CO₂e.

3.3.2 Install a Solar Photovoltaic (PV) System on the Roof of City Hall.

Importance/Context – Solar photovoltaic (PV) systems generate energy by harnessing sunlight. Technologies that can convert solar energy into electricity can be installed at the point of use. Solar energy is a clean source of electricity that does not produce greenhouse gas emissions. Installing PV panels on municipal buildings can also save money by offsetting the need for power from the grid, and increase local energy security and reliability. Cost savings will begin to accrue after a payback period of 10-15 years. Other benefits include reduced emissions of criteria air pollutants from nearby power plants, development and local demonstration of renewable energy technology, increased energy reliability, security, and cost certainty.

Implementation Scenario – PV panel installations cost about \$5-10 per Watt in most municipal building settings. Install PV systems on the roof of City Hall and use power generated on-site to meet electricity demand for that facility.

The State of California offers a rebate of \$2,800 per kW or \$2.80/Watt, for systems under 30kW, which covers about 30% of the total system cost. PG&E's Self-Generation Incentive Program offers a rebate of \$2,800 per kW for systems larger than 30kW. For more information: www.pge.com/selfgen. Additionally, the federal government offers tax incentives for installing photovoltaic panels on commercial-zoned buildings. Cities cannot generally take advantage of these tax incentives, but entities exist that can aggregate tax credits for cities. These entities essentially lease the rooftop from the city and pass along the energy savings to the city.

Emissions Reductions – For every kW of installed capacity, PV panels can generate about 2000 kWh of electricity per year. This represents [X]% of the annual electricity consumption of City Hall.

For every kW of installed capacity, PV-generated electricity savings translate to an annual emissions reduction of about 0.5 ton of CO₂ equivalent.

Projected Implementation Timeline

[Include a detailed timeline if possible.]

| Step Toward Implementation | Time Commitment* | Timeline for Completion | Lead Department/Staff |
|--|-------------------------|--------------------------------|------------------------------|
| <i>Determine installation feasibility</i> | <i>3 weeks</i> | <i>Month, Year</i> | <i>Dept/Staff</i> |
| <i>Approach facility manager about project</i> | <i>1 week</i> | <i>Month, Year</i> | <i>Dept/Staff</i> |
| <i>Develop full project scope of work and timeline</i> | <i>1 week</i> | <i>Month, Year</i> | <i>Dept/Staff</i> |
| <i>Apply for funding</i> | <i>1 month</i> | <i>Month, Year</i> | <i>Dept/Staff</i> |
| <i>Identify contractors and get estimates</i> | <i>2 weeks</i> | <i>Month, Year</i> | <i>Dept/Staff</i> |
| <i>Install PV technology</i> | <i>1 week</i> | <i>Month, Year</i> | <i>Dept/Staff</i> |
| <i>*Assumes a staff time commitment of a few hours per week throughout project</i> | | | |

4. Solid Waste Management Measures

Alameda County has a goal of reducing waste sent to the landfill by 75% from 1990 levels. [Jurisdiction] is committed to diverting 75 percent of waste from the landfill also. Strategies to achieve this goal are already set in motion, and this section of the action plan illustrates additional measures that should be taken immediately. Such measures include expanding existing commercial and residential recycling and composting programs, and expanding community education and outreach initiatives. Further, [Jurisdiction] is placing increasing emphasis on achieving emissions reductions through promoting sustainable landscaping practices such as those outlined in StopWaste.Org’s *Bay-Friendly Landscape Guidelines*

As is demonstrated in this document, many of StopWaste.Org’s program areas and (jurisdiction’s) own solid waste diversion programs dovetail nicely with municipal efforts to reduce greenhouse gas emissions. While the (jurisdiction’s) charge to reduce the waste stream may seem external to traditional emission reduction strategies such as energy and transportation, ICLEI and StopWaste.Org have illustrated the emissions benefits of waste reduction, recycling and composting and these are contained within this report.

Recycling and waste prevention programs make a significant contribution to reducing the energy and transportation needed to manufacture and ship virgin products and packaging. Composting makes a significant contribution to reducing methane production in the landfill and reduces the need for energy intensive fertilizers and pesticides. Indeed, the EPA 2000 report states:

“There are no plausible scenarios in which landfilling minimizes GHG emissions from waste management. For yard waste, GHG emissions are roughly comparable from landfilling and composting; for food waste, composting yields significantly lower emissions than landfilling. For paper waste, landfilling causes higher GHG emissions than either recycling or incineration with energy recovery.” (US EPA, 2000).

Results from research conducted by ICLEI and StopWaste.Org provided in this report, show that practices such as residential and commercial recycling and composting, buying recycled products, green building and Bay-Friendly Landscaping play an important role in a local government’s

emission mitigation strategy. In fact, climate change mitigation can be seen as an umbrella under which a jurisdiction’s waste diversion programs play a substantial role.

StopWaste.Org has a wealth of informational resources on the benefits and application of all of the recommended practices and also offers technical assistance. Please visit www.stopwaste.org.

4.1 Community Measures

Table (): Proposed Community Solid Waste Management Emissions Reduction Measures

| Solid Waste Management Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|--|----------------------|---|
| <ul style="list-style-type: none"> ▪ Increase participation in commercial and residential food waste collection program (for composting). | | |
| <ul style="list-style-type: none"> ▪ Increase participation in commercial recycling/reuse programs for paper, cardboard, and plastic film | | |
| <ul style="list-style-type: none"> ▪ Participate in StopWaste.Org’s audit and technical assistance program | | |
| <ul style="list-style-type: none"> ▪ Encourage businesses to participate in the County Green Business program | | |
| <ul style="list-style-type: none"> ▪ Increase participation in residential co-collection of yard debris and food waste | | |
| <ul style="list-style-type: none"> ▪ Increase participation in residential curbside recycling programs | | |
| <ul style="list-style-type: none"> ▪ Educate residents and businesses about the benefits of sustainable, Bay-Friendly Landscaping and Gardening | | |

Source: CACP Model output

4.2 Municipal Measures

Table (): Proposed Municipal Solid Waste Management Emissions Reduction Measures

| Solid Waste Management Emissions Reduction Measures | Year to be Initiated | Annual CO ₂ e Reduction by 20XX (tons) |
|---|----------------------|---|
| <ul style="list-style-type: none"> ▪ Implement a duplex copying/printing policy in municipal office buildings | | |
| <ul style="list-style-type: none"> ▪ Reduce Landscape Waste by implementing StopWaste.Org’s <i>Bay-Friendly Landscaping</i> Program. Include practices such as: <ul style="list-style-type: none"> • Increase on-site composting and mulching of municipal plant debris • Incorporate Bay-Friendly Landscaping practices into new or renovated medians¹⁴ | | |

¹⁴ Including the use of drip irrigation systems, a diverse plant pallet to resist pests, and reducing turf and sheared hedges

| | |
|---|--|
| <ul style="list-style-type: none"> ▪ Increase recycling in municipal facilities | |
| <ul style="list-style-type: none"> ▪ Adopt policies that support reduced waste (and which support other environmental priorities) including the following: <ul style="list-style-type: none"> • Environmental purchasing policy. • 75% Diversion Goal • C&D ordinance • Civic Bay-Friendly/Green Building Ordinance • Residential green building resolution • Duplex/double sided copying policy • Consider mandatory residential & commercial recycling ordinance | |
| <ul style="list-style-type: none"> ▪ Revise franchise language as franchises are renegotiated to include language that maximizes diversion (see StopWaste.Org for best practices) | |

Source: CACP Model output

4.3 Example Community and Municipal Solid Waste Management Measures

4.3.1 Increase business waste prevention and recycling practices including the reuse of cardboard boxes, and the recycling of plastic film, cardboard, and paper. Utilize reusable plastic transport packaging in place of limited-use wood pallets or cardboard boxes.

Increase outreach on the availability of these services to businesses. Also identify businesses that would benefit from the services of the StopWaste.Org Partnership which provides a comprehensive audit program for medium and large businesses to reduce waste and energy consumed and helps businesses implement the practices outlined above.

Participate in the county green business program by recruiting area businesses to sign on.

Importance/Context – **The commercial sector generates two-thirds of the jurisdiction’s total waste. Expanding recycling, waste prevention and composting programs for jurisdiction’s businesses will reduce global warming emissions.** Recycling and waste reduction saves resources and reduces the emissions that cause global warming. Recycling reduces greenhouse gas emissions because manufacturing products from recovered materials avoids emissions from the energy that would have been used during extraction, transport and processing of virgin raw materials. The reuse and recycling of organic materials (such as paper, cardboard, and food) also keeps waste out of the landfill where it breaks down and releases methane, a powerful greenhouse gas. Such practices also have the potential to reduce the transportation of waste materials to the landfill, thereby conserving fuel.

Implementation Scenario – Increase outreach and education to businesses within the community on the benefits of reuse and recycling. Provide the necessary facilities and services to make such practices as convenient as possible.

Emissions Reductions –

i. Increase the reuse and recycling of cardboard boxes: In Alameda County, about 42,000 tons of cardboard enter the waste stream every year. If 50 percent of the cardboard was reused and/or recycled, the County would reduce emissions by 81,200 tons CO₂e annually. For every 1 ton of corrugated cardboard boxes that is kept from entering the landfill, about 3.87 tons of CO₂e are avoided.

ii. Increase the recycling of plastic film: Recycling plastic film such as that used to make plastic bags, reduces emissions by avoiding the upstream energy necessary to produce new products. For every ton of plastic film (in the form of Low Density Polyethylene LDPE) that is recycled, about 1.9 tons of CO₂e are avoided annually.

iii. Recycling paper: Recycling paper reduces emissions by avoiding the upstream energy necessary to produce new units of paper, and by avoiding emissions at the landfill since paper is an organic material that decomposes to form methane. For every ton of mixed general paper recycled about 4.3 tons of CO₂e are avoided.

iv. Increase the utilization of reusable transport packaging: Plastic pallets are more durable and last about 50 times longer than wood pallets and therefore produce less waste. For every reusable plastic pallet utilized in place of a wooden one, the community is achieving an emissions reduction of approximately 830 pounds CO₂e. Similar benefits are realized by replacing limited or one-time use cardboard boxes with durable totes and containers.

4.3.2 Separating commercial and residential food waste for composting instead of landfilling.

Importance/Context –The reduction of food waste sent to the landfill, reduces the methane emissions that are produced when organic waste decomposes in the absence of oxygen at the landfill. Methane is a powerful greenhouse gas, 23 times more than carbon dioxide. Food waste produces more methane than any other organic material. – Food waste can be used for producing compost. Additionally, the resultant compost reduces GHG in a few ways: 1) The composting process itself helps to bind or sequester carbon in the soil; 2) The resultant compost results in reduced use of nitrogen fertilizers which are not only energy intensive to produce, but also a leading source of nitrous oxide emissions, a potent GHG; and 3) It's use helps to mitigate the decline in soil quality expected from climate change impacts. Sending organics to a composting facility reduces more greenhouse gases than sending organics to a landfill, even one with methane recovery.

Implementation Scenario – Increase outreach and education to businesses and residents within the community on the benefits of separating food waste for composting collection. Provide the necessary facilities and services to make such practices as convenient as possible.

Emissions Reductions – Food waste produces more methane per wet ton than most other municipal solid waste materials. If [Jurisdiction] reduced the amount of food waste that is sent to the landfill by 1 ton, the community would prevent approximately 1.09 tons of CO₂e from entering the atmosphere.

4.3.3 Adopt an ordinance that increases the recycling of construction and demolition debris (if not already adopted).

Importance/Context – Construction and demolition (C&D) debris represents a significant portion of the total waste stream in Alameda – up to 21%. In fact, a typical residential home produces approximately 17,000 pounds of C&D waste. C&D waste generally consists of wood, drywall, metal, concrete, dirt and cardboard. Once it is sent to the landfill, the organic materials break

down and emit methane, a potent greenhouse gas. Recycling C&D waste not only keeps it from ending up in the landfill, but also reduces the upstream energy consumption that would occur to manufacture new construction materials.

Implementation Scenario – Implement a C&D ordinance that requires contractors to divert at least 50 percent of their construction waste materials from the landfill.

Emissions Reductions – An average 2,000 square foot home produces approximately 17,000 lbs of C&D waste. If 50% of an average home’s C&D debris is not sent to the landfill, and the organic materials make up 47%, then approximately 1,200 lbs of CO₂e is prevented from entering the atmosphere.

4.3.4 Implement a duplex copying/printing policy in municipal office buildings.

Importance/Context – One simple but effective way to reduce the amount of paper that the municipal government uses (and save money) is to implement a two-sided copying policy. Printing double-sided reduces the amount of upstream energy necessary to produce and transport new paper. Additionally, trees and water are conserved and polluted effluents that result from virgin paper manufacturing are also reduced.

Implementation Scenario – Set all municipal-owned printers to “double-sided” as the default mode. Set a goal of saving at least 1,000,000 sheets of paper (2000 reams) in a year.

Emissions Reductions –For every 1,000,000 sheets of paper saved per year, the jurisdiction will reduce the associated emissions (upstream energy consumption and decomposition in landfill) by approximately 1.9 tons CO₂e.

This policy will only be successful if individual office managers and administrative staff are educated on the importance and benefits of duplex copying and printing.

4.3.5 Reduce Landscape Waste by Taking Advantage of StopWaste.Org’s Bay-Friendly Landscaping Program and Adopting a Bay-Friendly Landscaping Ordinance

Importance/Context Bay-Friendly landscaping is an integrated solution that fosters soil health, conserves water, reduces waste, and reduces the emissions that cause global warming. Through the *Bay-Friendly Landscaping Program*, StopWaste.Org provides training, landscape design assistance and grant funding to local governments in Alameda County. The objective of the resources that StopWaste.Org provides is to assist local governments to design public landscapes that cost less to maintain, consume fewer resources, send less waste to the landfill and do not negatively impact the Bay.

Bay-Friendly Landscaping practices described below not only serve to reduce the emissions that cause global warming, but provide many additional benefits as well. Trees, for example, provide habitat for birds, beautify urban areas, increase property values, and help to control stormwater runoff. Shade trees also reduce the need for air conditioning thereby cutting energy costs.

Selecting appropriate plants that require less shearing reduce the need for running various pieces of equipment. This not only reduces greenhouse gas emissions, but reduces local air and noise pollution as well.

Additionally, keeping lawn and plant clippings on site improves soils. Grass-cycling, mulching and using compost creates healthier landscapes without the use of synthetic pesticides and fertilizers, all of which can help reduce water pollution.

Implementation Scenario – Adopt an integrated Bay-Friendly /Green Building ordinance (or if your jurisdiction already has a green building ordinance, a stand alone bay friendly landscaping ordinance) that requires new public landscapes and buildings to be designed and built in a resource-efficient manner. Apply Bay-Friendly Landscaping techniques to all public green spaces. In partnership with StopWaste.Org, encourage residents and landscape professionals to do the same by placing educational resources on the local government website and by giving recognition to Bay-Friendly Landscapes in the community. Build municipal capacity to use sustainable landscaping techniques by sending public landscape maintenance professionals to Bay-Friendly Landscaping maintenance training. Local government staff can apply Bay-Friendly Landscaping techniques to public spaces as well as assist in educating residents and landscape professionals on the benefits of a well-designed and maintained landscape. Incorporate Bay-Friendly Landscaping practices into new or renovated medians, including the use of drip irrigation systems, a diverse plant pallet to resist pests, and reducing turf and sheared hedges.

A Bay-Friendly Landscape can reduce labor and fuel costs as well as waste disposal fees and ongoing maintenance and water costs.

Resource Savings – According to the California Integrated Waste Management Board (CIWMB), yard trimmings are one of the largest components of municipal waste in California. In Alameda County in the year 2000, 110,000 tons of plant debris were sent to the landfill.

Bay-Friendly Landscaping practices constitute an integrated, conscious approach to reducing this waste. These practices include selecting low water using native or Mediterranean plants; keeping plant debris and grass clippings on site; nurturing the soil by using mulch and compost; minimizing lawn size; and planting trees strategically to moderate temperatures.

Such practices not only reduce waste, but also reduce costs and resource consumption by reducing the need for irrigation, and the need for energy intensive fertilizers and pesticides. Nitrogen fertilizers release nitrous oxide, a potent greenhouse gas, into the atmosphere. Using compost reduces the need for nitrogen fertilizers by at least 20 percent. These practices also restore the soil's ability to absorb and filter water, reducing runoff into local creeks.

Emissions Reductions – Bay-Friendly Landscaping reduces greenhouse gas emissions in the following ways:

- i. By reducing the tonnage of yard trimmings being sent to the landfill where it breaks down and releases methane
- ii. By keeping yard trimmings on site, thereby eliminating the need to transport waste to the landfill. In this case, it's the transportation that is the source of greenhouse gas emissions.
- iii. By avoiding fuel consumption due to running trimming and mowing equipment, which necessitates the burning of gasoline.
- iv. By requiring less irrigation. Reducing water usage reduces that amount of energy it takes to irrigate lawns.
- v. By reducing the need for nitrogen fertilizers and pesticides. The use of compost and mulch can reduce the need for nitrogen fertilizers by at least 20% (IPCC Third Assessment Report, 2001, Section 3.7.2.3) Nitrogen fertilizer and pesticide consumption require significant energy consumption in their production. In addition, nitrogen fertilizer use contributes to the release of nitrous oxide, a particularly damaging greenhouse gas. The use of such fertilizers and pesticides also contaminate local water sources through storm water runoff. This strategy addresses both local air and water quality issues.

vi. By strategically using trees to moderate temperatures rather than having to rely on electricity and/or natural gas for cooling and heating.

vii. By selecting plants that require less shearing, by reducing lawn size, or by keeping grass clippings on site through grass-cycling, a local government can potentially avoid sending as many as 8 tons of yard waste per acre every year to the landfill. The greenhouse gas emissions avoided by eliminating this waste from the landfill, where it breaks down and releases methane, equals approximately 2.5 tons of CO₂e per acre per year.

viii. By keeping green waste on site, the local government is also reducing the greenhouse gas emissions that result from transporting the waste to the landfill. Transporting waste in heavy trucks requires energy and results in greenhouse gas emissions. The gallons of fuel saved by not having to annually transport 8 tons of waste per acre to the landfill results in a greenhouse gas emission reduction of approximately 1.15 tons of CO₂e.

ix. In addition, appropriate plant species and appropriately sized lawns demand less shearing and mowing, conserving the fuel that is necessary to run trimmers and mowers. Assuming a significant reduction in time spent mowing and trimming Bay-Friendly Landscapes, a landscape professional can reduce equivalent carbon dioxide emissions by approximately 315 pounds of CO₂e per acre per year, by avoiding the consumption of 15 gallons of gasoline per acre of lawn.

x. Appropriate plant species and appropriately sized lawns also demand less water. Coupled with using compost and mulch, which can increase soil permeability and water-holding capacity, these Bay-Friendly practices reduce greenhouse gas emissions by reducing water usage, thereby saving the energy consumed to irrigate lawns. According to the California Energy Commission 3,950 kWh are consumed per 1 million gallons of water supplied in Northern California (water cycle energy intensity). Sustainable landscaping practices can reduce water demand by up to 50%. The current water usage for landscaping in California Coastal Zones (such as San Francisco Bay Area) is about 55,000 gal/year/single family lawn. With a 50% reduction in water demand in the whole Alameda County the cut in energy use will be equivalent to a reduction of 9,450 tons CO₂e per year or 54 lbs of CO₂e per year per single family lawn.

xi. Another way in which to achieve energy conservation and reduce greenhouse gas emissions through landscaping practices is by planting trees. Strategically planting trees is a relatively easy way to address the urban heat island effect and to lower the amount of energy and money consumed to heat and cool buildings.

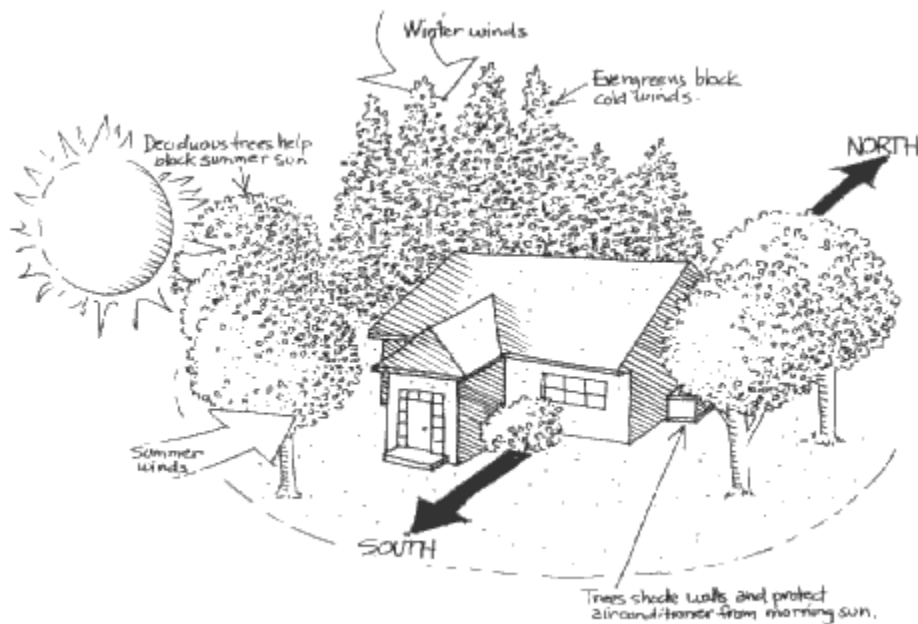
On hot summer days, cities can be up to eight degrees Fahrenheit hotter than their suburban and rural surroundings. This phenomenon, the Urban Heat Island effect, occurs because urban development results in large amounts of paved and dark colored surfaces such as roofs, roads, and parking lots that absorb and store energy causing the surface and ambient air temperatures to rise. Shading buildings and paved surfaces serves to reduce this effect in a way that does not necessitate energy consumption.

In addition to reducing air temperature around a building, the shade from well-placed trees keeps air conditioning units cooler and running more efficiently. A single tree can reduce annual air conditioning use by as much as 8% (300 kWh for an average home). As such, a building with a shaded air conditioner releases approximately 147 fewer lbs of CO₂e than a building that does not have trees as part of its landscape.

To most effectively conserve energy and reduce emissions, plant trees on the east and west sides of the buildings. West shading is most important because peak demand for energy occurs in the afternoon when the sun shines on the west face of buildings and overall ambient temperatures are higher. Avoid shading on the southern sides of buildings to allow for the winter sun to penetrate and heat the building. See the diagram below for tips on where to strategically plant trees around a building. Identify source of diagram.

A number of **Bay-Friendly Landscape Guidelines** and publications are available for download from www.BayFriendly.org

Also see ICLEI's *Urban Forestry Toolkit* to learn more about the potential for trees to help local governments conserve energy and reduce greenhouse gas emissions. The toolkit is available at www.iclei.org/usa.



4.3.6 Encourage new home developments to be GreenPoint Rated by adopting a residential green building ordinance.

Although not traditionally thought of as a waste management strategy, green buildings play a significant role in reducing the amount of waste sent to landfills. Construction and demolition debris comprise up to 30% of all materials disposed of in California's landfills, and over 21% of materials disposed of in Alameda County. Many of these materials have green house gas implications once landfilled –from both the process of organic materials breaking down in the landfill and producing methane and other green house gasses, and the energy needed to produce more building materials from raw materials (as opposed to recycling the waste to be used for feedstock in new materials). It is because of these reasons that we place green buildings in this section.

Importance/Context – GreenPoint Rated is a green building program administered by the non-profit organization *Build It Green* (BIG), located in Berkeley, California. GreenPoint Rated was conceived of and developed with assistance from the Green Building Program in Alameda County (StopWaste.Org).



The GreenPoints guidelines and rating system, begun in 2000, has grown rapidly and is becoming a standard for green residential home construction and major renovation projects throughout the State of California. The GreenPoints system is comprised of five related categories: energy efficiency, resource conservation, indoor air quality, water conservation, and community, all of which are important to the practice of green building. In order to meet the GreenPoints criteria, a home must

obtain at least 50 points and meet minimum point thresholds in each of the five point categories. Homes are evaluated by a third-party professional rater. Once a residence is verified to meet the criteria for a GreenPoint home, BIG issues a certificate to the builder which can be used for marketing purposes.

GreenPoint Rated homes achieve greenhouse gas emissions reductions from, among other practices, solid waste management measures such as Bay-Friendly Landscaping and recycling of C&D debris; increased energy efficiency; utilizing renewable energy; and conserving water both inside and outside the home.

Implementation Scenario – Cities can encourage green building by adopting the Alameda County Residential Green Building Guidelines and GreenPoint Rating System as the recognized green building standard for their jurisdiction. Cities can consider offering incentives to developers for achieving GreenPoint Rated homes and Bay-Friendly landscapes, such as expedited permitting processes, reduced fees, or other rewards.

Emissions Reductions - For the purposes of this report, we have calculated model CO₂e reductions for building a new GreenPoint Rated home. The new home is assumed to be located in a suburban residential development, of approximately 2,200 square feet. Our model home is conservatively estimated to save about 7 percent of annual operating energy through efficient design and equipment, will receive roughly 50 percent of its energy through renewable sources (photovoltaics and a solar hot water system), recycle 50% of construction and demolition waste, conserve 12,500 gallons of water per year indoors, conserve about 28,000 gallons per year per simple family lawn from landscape irrigation, and follow Bay-Friendly Landscaping practices in a 1,000 square foot garden. The resulting emissions reduction values are for illustrative purposes only; actual homes will differ in their savings.

The following table lists the categories where green house gas reductions have occurred in our model home: energy efficient design, energy efficient equipment selection, renewable energy generation, water conservation indoors, Bay-Friendly landscape practices, and solid waste management. (Please see Appendix D for a detailed explanation of calculations and assumptions).

Table (): Emissions Reductions from a Model GreenPoint Rated New Home

| Measures | CO ₂ e Emissions Reduction |
|--|---------------------------------------|
| Solid Waste Management <i>Recycled 50% of construction and demolition waste and 95% of wood and cardboard</i> | 11,300 lbs |
| Energy Efficient Design <i>Effective insulation installation, ductwork design and placement, appropriate overhang design</i> | 650 lbs |
| Energy Efficient Equipment <i>ENERGY STAR qualified appliances throughout</i> | 720 lbs |
| Renewable Energy Generation <i>2.4 kW photovoltaic system and solar hot water system</i> | 2,250 lbs |
| Indoor Water Conservation <i>Install water saving appliances, high efficiency toilets, and low-flow faucets & showers</i> | 24 lbs |
| Bay-Friendly Landscape <i>Select appropriate plants, reduce lawn size, and keep plant debris on site</i> | 127 lbs |
| Total – Equivalent Lbs of CO₂e saved per new home | 15,071 |
| Total – Equivalent Tons of CO₂e saved per new home | 7.5 |

4.3.7 Build LEED-certified municipal buildings and encourage LEED on private commercial developments.

Importance/Context – A civic building that receives a high rating from the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) Rating System can save resources and reduce emissions through a range of measures, including: recycling 50% of its construction waste, the design and selection of energy efficient equipment, conserving water inside and out, adhering to Bay-Friendly Landscaping guidelines, encouraging alternative transportation options, and establishing “green” cleaning and purchasing policies.

LEED (Leadership in Energy and Environmental Design) certification provides independent, third-party verification that a building project meets the highest performance standards. LEED-certified buildings are awarded a plaque by the U.S. Green Building Council that is recognized nationwide as proof that a building is environmentally responsible, profitable, and a healthy place to live and work.¹⁵ LEED certification can be applied to every building type and phase of a building lifecycle. The LEED rating system assigns point values according to buildings’ environmental design, construction and performance. LEED recognizes building performance in the areas of human and environmental health; sustainable site development; water savings; energy efficiency; materials selection; and indoor environmental quality.

Implementation Scenario – Cities can encourage municipal green building by adopting a joint green building/Bay-Friendly landscape ordinance for all public projects over a certain size or dollar threshold. Further, cities should adopt the Bay-Friendly Landscape Guidelines and

¹⁵ Visit www.usgbc.org for more information on LEED.

Gardening Guide, and the LEED Reference Guides as they may be amended from time to time, as City reference documents. To implement the ordinance, City staff should be directed to explore incentives to encourage use of the LEED™ Rating Systems and Bay-Friendly Guidelines by private developers of construction projects within the City.

Emissions Reductions – To illustrate how multiple green building measures can be implemented to reduce greenhouse gas emissions and achieve other resource savings, we have calculated the results from building a moderately sized, 8,500 square foot LEED-certified fire station. In this scenario, the building was designed and constructed with durability, energy efficiency, cost effectiveness, and occupant comfort in mind (For more on the scenario below, please see Appendix A for a detailed explanation of calculations and assumptions).

The construction of the fire station diverted over 75% of waste through recycling and reuse. Our model fire station is designed to exceed California’s energy code by 30 percent. Efficient lighting, heating and cooling equipment contribute to the lowering operating energy. Commissioning of the building, a requirement for LEED certification, also saves energy by uncovering construction errors and providing oversight on operating the building as efficiently as possible. The model fire station also includes a small photovoltaic system that produces about 10% of the electricity needed by the fire station. Indoor water conservation measures save over 60,000 gallons of water per year, resulting in emissions reduction due to the energy used to treat and convey water in northern California. Finally, our model fire station had a large landscaped area of 2.25 acres that were assumed to be designed and maintained to the Bay-Friendly Landscape standards.

Table (): Emissions Reductions from a Model LEED-Certified Fire Station

| Measures | CO ₂ e Emissions Reduction |
|---|---------------------------------------|
| Building Commissioning <i>Energy Savings</i> | 1.8 Tons |
| Solid Waste Management <i>Recycled 75% of construction and demolition waste</i> | 21.7 Tons |
| Energy Efficient Design & Equipment <i>Energy efficient equipment and appliances</i> | 8 Tons |
| Renewable Energy Generation <i>12.8 kW photovoltaic system</i> | 4 Tons |
| Water Conservation <i>Indoor and outdoor water savings</i> | 1.4 Tons |
| Bay-Friendly Landscape <i>Select appropriate plants, reduce lawn size, and keep plant debris on site</i> | 6.2 Tons |
| Total – Equivalent Tons of CO₂ saved | 43.1 Tons |

When implemented together, our model Fire Station account for **greenhouse gas emissions reductions equivalent to over 43 tons of CO₂e in one year.**

4.3.8 Other Municipal Solid Waste Management Measures

- Adopt an environmental purchasing policy for municipal purchases which addresses the areas of recycled content, recyclability, energy and water efficiency and toxicity. StopWaste.Org has a model policy available for municipal adoption. Purchasing recycled content and recyclable products contributes to less energy consumed in the manufacture, transport and disposal of virgin products. It is estimated that 30% of waste going to the landfill consists of packaging. Greenhouse gases are released in the production and transport of non-recyclable packages to the consumer and to the landfill. An EPP policy will encourage suppliers of municipal products to reduce packaging as well as to provide products in recyclable, recycled content packaging.
- Increase promotion of residential co-collection of green and food waste. Since the addition of food waste into green waste carts is a relatively new program, it needs additional outreach and promotional efforts. Organics such as food waste, paper and green waste are the most problematic materials in the landfill in terms of greenhouse gas production.
- Promote Multi-family recycling.

4.3.9 Summary of Municipal Solid Waste Management Measures

To illustrate the importance of solid waste management strategies to combat climate change, the following table summarizes a suite of measures a city can undertake to reduce emissions.

Table (): Summary of Emissions Reductions from Waste Management Practices

| Waste Management Practice | Metric | CO ₂ e Reduction |
|---|--|-----------------------------|
| Duplex copying and printing (office paper) | 2,000 reams | 1.9 Tons |
| Recycle plastic film (LDPE) | 1 ton | 1.9 tons |
| Recycle paper (mixed general) | 1 ton | 4.3 tons |
| Reusable transportation package | Each reusable pallet instead a wood pallet | 800 lbs |
| Recycled/reuse cardboard boxes | 1 tons of cardboard | 3.87 tons |
| Compost food scraps | 10 tons | 10.9 tons |
| Bay-Friendly landscaping on civic grounds | 100 acres | 250 tons |
| Implement a Construction & Demolition Recycling Ordinance (50% Diversion) | 200 new homes | 980 tons |
| Build a LEED-Certified Civic Building | 8,500 sf firestation | 33.8 tons |
| Build GreenPoint Rated Homes with BFL Practices | 200 new homes | 500 tons |

5. Summary of Emissions Reduction Measures

Based on the emissions reductions estimated to be achieved since *[base year]* through the above proposed measures, and the contribution of the existing measures *[Jurisdiction]* will have to reduce *X* tons of CO₂e emissions in the community, including at least *Y* tons of CO₂e emissions from municipal operations, in order to achieve our emissions reduction target.

Table () : [Jurisdiction] Emissions Summary

| [Jurisdiction] Emissions Summary <i>[Populate table and figure with numbers from inventory output from CACP software.]</i> | |
|--|--|
| | Community Analysis Municipal Operations Analysis |
| Base year | |
| Quantity of CO ₂ e emissions in base year (tons) | |
| Target year | |
| Business-as-usual projection of CO ₂ e emissions in <i>[target year]</i> (tons) | |
| Percent CO ₂ e reduction targeted by target year relative to base year (%) | |
| Quantity of CO ₂ e reduction targeted relative to base year (tons) | |
| Quantity of CO ₂ e reduction achieved to date (tons) | |
| Percent of CO ₂ e reduction target achieved to date (%) | |
| Quantity of CO ₂ e reduction pending to reach target (tons) | |
| Quantity of CO ₂ e reduction to be achieved through proposed measures (tons) | |
| Percent of CO ₂ e reduction to be achieved through all existing and proposed measures (%) | |

Source CACP Model Output

VII. Measures Implemented External to [Jurisdiction]

In addition to emissions reduction measures implemented within our community, the effects of measures recently implemented at the state level also deserve consideration in the context of our greenhouse gas emissions inventory. These measures have not been integrated into the estimated emissions reductions for *[Jurisdiction]* above because they are imposed from outside of the community and their creation and enforcement is beyond our control. *[Jurisdiction]* is committed to meeting our emissions reduction target without relying on externally imposed policies. However, we feel it is appropriate to have a sense for how emissions reductions achieved due to external policies may compare with the work we are engaging in within our community. *[Note that ICLEI does not advocate counting these externally imposed emissions reductions toward the local emissions reduction target.]*

In California, numerous policies have been adopted by the state legislature or governor that either are currently or are projected to significantly reduce greenhouse gas emissions.

In 1989, AB 939 established the current organization, structure and mission of the California Integrated Waste Management Board (CIWMB). The purpose was to direct attention to the increasing waste stream and decreasing landfill capacity, and to mandate a reduction of waste being disposed. Jurisdictions were required to meet diversion goals of 25% by 1995 and 50% by the year 2000. A disposal reporting system was established with CIWMB oversight, facility and program planning was required, and cities and counties began to address their waste problems.

In 2002, the California Senate passed SB1078 requiring public utilities to gradually increase the percentage of their energy supply generated from renewable sources, reaching 20 percent renewable content by 2017. This means that, over time, a larger and larger share of the energy electrifying homes and businesses in *[Jurisdiction]* will be generated with clean power. If this policy is fully enacted, we expect this change to decrease community emissions by approximately X percent and municipal emissions by Y percent from baseline levels.

Nationwide, automobile manufacturers are bound by fuel efficiency standards set by the Department of Transportation. These standards, known as the Corporate Average Fuel Economy (or “CAFE”) standards, require that the fleet of passenger cars sold by any single manufacturer have an average fuel economy of 27.5 mpg – the same standard that was in place in 1985, despite technical progress and increased understanding of the environmental impacts of fossil fuel combustion. The CAFE standards are adopted at the federal level, and states are prevented from passing laws addressing vehicle fuel economy. In response to these stagnant federal standards, the California Assembly passed AB 1493, which allows the California Air Resources Board to create carbon dioxide emissions standards for cars sold in California. They argue that a greenhouse gas emissions standard is distinct from a fuel economy standard, despite the fact that it would necessitate improved gas mileage. If the bill goes into law, by the year 2015 the reduction in fuel consumption will reduce community emissions in *[Jurisdiction]* by X percent and municipal emissions by Y percent compared to the base year.

This legislation is currently being challenged in court by car manufacturers, who suggest that the state is interfering with the federal CAFE standards. Therefore, the *[City/Town/County]* should not consider these reductions to be definite, and should consider opportunities to collaborate with higher levels of government to increase automobile fuel economy standards.

Executive Order S-20-04 was signed July 27, 2004 and directs the state to commit to aggressive actions to reduce state building electricity usage by implementing cost-effective energy efficiency

and green building strategies. To this end, the Order directs all facilities owned, funded or leased by the state (and encourages cities, counties and schools as well) to take measures to reduce grid-based energy purchases for state-owned buildings by 20% by 2015. This is to be done through cost-effective efficiency measures and distributed generation technologies. These measures include designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings, seeking out office space leases in buildings with a U.S. EPA ENERGY STAR rating, and purchasing or operating ENERGY STAR electrical equipment whenever cost-effective.

In 2006, Governor Schwarzenegger signed AB 32 – the Global Warming Solutions Act – into law. AB 32 institutes a mandatory limit on greenhouse gas emissions. The limit will be set to achieve the target of reducing statewide emissions to 1990 levels by the year 2020. The bill directs the California Air Resources Board (CARB) to establish a mandatory emissions reporting system to track and monitor emissions levels and to develop a wide range of compliance options and enforcement mechanisms.

VIII. Conclusion

Climate change is an issue of growing concern for communities across the United States and around the world. The *[city/town/county]* of *[Jurisdiction]* has displayed great leadership and foresight in choosing to confront this issue now. By reducing the amount of greenhouse gases emitted by our community, *[Jurisdiction]* joins hundreds of other American cities in stemming the tide of global warming and the numerous threats associated with it, such as increasingly severe weather events, disrupted agricultural systems and rising sea levels.

In addition to mitigating the destabilization of the climate and associated effects, *[Jurisdiction]* stands to benefit in many other ways from the proposed measures outlined in this report. *[Summarize co-benefits associated with existing and proposed measures, such as financial savings, efficiency, reduced local air pollution and associated health benefits, reduced traffic, etc.]*

Meeting *[Jurisdiction]*'s reduction target will require both persistence and adaptability. *[This is a good place to outline follow-up plans and next steps, e.g. City Council check-in meeting at a certain date, re-evaluation of Action Plan at a certain date, etc.]*

IX. Guide for Future Steps

A. Administration and Staffing

[A key element of an effective emissions reduction action plan is assigning and defining management responsibilities for each of the plan's the individual components. These assignments can be specified in the above section focused on proposed emissions reduction measures. Wherever possible, leverage relationships and responsibilities already in place to most seamlessly fold the Climate Action Plan into the context of existing workloads. Describe your general plan for administration and staffing of your Jurisdiction's climate protection efforts in this section.]

[An appropriate staff person within your local government should be assigned overall responsibility for coordinating the implementation of this Climate Action Plan. The staff person and department responsible will vary from jurisdiction to jurisdiction. It is often a good idea to establish an interdepartmental committee to ensure effective communication and coordination between those responsible for the program's various elements.]

[Ensure that there will be adequate resources to implement your Climate Action Plan, including funding and adequate staff or outside assistance. If it is necessary to add staff or outside assistance, the Plan should acknowledge this. One possible way to use existing resources more effectively might be to use volunteers or interns from the community to gather information or perform public outreach. Protecting the environment is an issue that appeals to many well-informed citizens.]

[The Climate Action Plan is an opportunity to renew and reinforce your local government's commitment to existing programs and projects that have the effect of reducing GHG emissions. By identifying them as key elements in your Climate Action Plan, measures that may, for one reason or another, have been languishing on the back burner can be brought back to life. Ensure that all measures are implemented fully.]

B. Financing and Budgeting

[Some emissions reduction opportunities, such as adding more buses or installing a regional light rail system, may require significant up-front investment, whereas others, such as adjusting automatic lighting schedules in municipal facilities or enabling power saving features on existing office equipment may require little or no funding. Describe your plan for securing funding for the implementation of emissions reduction measures in this section.]

[Consider opportunities to secure financial resources within the context of the existing municipal budget. Parking revenues, for instance, might be used to pay for alternative transit improvements, on the grounds that these improvements reduce parking demand. Energy-saving community measures might be funded via fees assessed through utility bills, building permits, etc. Incentives may be available from local utilities or other regional, state or federal agencies. Some measures might also be accomplished at little or no initial cost via contracting with an energy service contractor.]

C. Developing a Timeline

[The schedule for implementing this Climate Action Plan should be established to enable your Jurisdiction to achieve its emissions reduction targets by the target year. It must be practical,

taking into account the administrative, political, technical, and other issues your Jurisdiction will face in getting programs up and running. It must allow time for stakeholder involvement in each phase as appropriate. Yet it should also contain significant near-term steps, pushing your Jurisdiction to build from the momentum created by releasing this plan. Consider emphasizing progress on low-hanging fruit first, allowing time to lay the groundwork for more complicated projects.]

D. Public Involvement in the Implementation Process

[The process of implementing many of the proposed measures in this Climate Action Plan will necessitate the involvement of community stakeholders, including the public at large. Explore opportunities to involve these stakeholders in the development, review and implementation of this Plan to increase community involvement and support. Document intended strategies to increase public involvement in this section.]

E. Monitoring

[Establish a system for monitoring the implementation of your Climate Action Plan and adjusting the plan as opportunities arise. Adjust energy and waste savings numbers from proposed measures in your emissions tracking software as projects are implemented and actual savings are documented. Incorporate greenhouse gas emissions reduction progress into other reports your Jurisdiction is already producing. Use this section to describe how monitoring will be accomplished.]

F. Re-Inventory

[All Jurisdictions are encouraged to re-inventory their greenhouse gas emissions on a regular basis (e.g., every year or every few years). The process of conducting a re-inventory will allow you to demonstrate progress toward local emissions reduction targets and identify opportunities to integrate new or improved measures into your emissions reduction plan. Describe how the re-inventory process will be institutionalized (e.g., frequency, responsibilities) in your community in this section.]

List of Appendix

- A. Inventory Summary Reports,
Data Sources, Assumptions and Notes for the Municipal, Community Inventory and
Forecast of your Jurisdiction*
- B. List of Proposed GHG Emission Reduction Measures*
- C. ABAG's Smart Growth Checklist*
- D. Assumptions and Calculations*