ALAMEDA COUNTY CLIMATE ACTION PLAN

FOR GOVERNMENT SERVICES AND OPERATIONS THROUGH 2020

MAY 2010

Alameda County
SUSTAINABILITY
Local Action, Global Impact.

ONLINE RESOURCES

Alameda County Climate Action Plan for Government Services and Operations and Executive Summary
http://www.acsustain.org

Alameda County (Unincorporated Area) Community Climate Action Plan
http://www.acgov.org/cda/planning/

Alameda County Strategic Vision
http://www.acgov.org/strategic.htm

Information on Alameda County sustainability initiatives
http://www.acsustain.org

COVER ARTWORK

The *Recycling and the Environment Quilt Project* was completed by 22 boys aged 15 to 18 at the youth detention facility within the Alameda County Juvenile Justice Center (JJC) in early 2010, under the guidance of teaching artist Marion Coleman. After learning about environmental issues affecting the local and global community, participating teens worked individually or in small groups to design and machine-stitch the 24-inch by 18-inch quilts.

The Project is an initiative of the Alameda County Arts Commission's Arts Education Program that aims to empower young people to make positive changes in their lives, families, and communities. The Arts Education Program is managed by the Arts Commission in partnership with the Probation Department, Alameda County Office of Education's Butler Academic Center, the Alameda County Alliance for Arts Learning Leadership and the Foundation for the Arts in Alameda County. Photographs supplied by the Alameda County Arts Commission. Photography by Sibila Savage Photography.

Special thanks to Rachel Osajima, Executive Director, Alameda County Arts Commission, for designing and providing support in the development of the cover page artwork.

Cover design based on design by Graddy Graphic Design
Sustainability logo by DK Design Studio

Printed on recycled paper

MESSAGE FROM THE ALAMEDA COUNTY BOARD OF SUPERVISORS

Investing in our future is not a luxury, but an imperative. With this in mind, the *Alameda County Climate Action Plan for Government Operations and Services* focuses our efforts on the highest-leverage actions that address climate change and other County priorities.

We are committed to implementing this Plan because the result will be wise investments of taxpayer dollars for long-term savings, improved services, promotion of the local green economy, and, ultimately, improved quality of life for County residents.

Therefore, on May 4, 2010, the Board of Supervisors unanimously passed a resolution that established 16 Commitments to Climate Action, set greenhouse gas reduction targets, and adopted this Plan. The Plan was the result of a multi-year collaborative process involving all County agencies.

Meeting the goals of this Plan will require the leadership and support of each County agency and employee. Working together, we can develop creative and breakthrough solutions that not only address climate change but also are investments in the County's future.

Alice Lai-Bitker
President of the Board

Scott Haggerty
District 1 Supervisor

Gail Steele
District 2 Supervisor

Alice Lai-Bitker
District 3 Supervisor
President

Nate Miley
District 4 Supervisor
Vice-President

Keith Carson
District 5 Supervisor

Susan S. Muranishi
County Administrator

COUNTY MISSION

To enrich the lives of Alameda County residents through visionary policies and accessible, responsive, and effective services.

COUNTY VISION

Alameda County is recognized as one of the best counties in which to live, work, and do business.

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ACKNOWLEDGMENTS

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) is the result of the hard work and persistence of many individuals at the County of Alameda. In particular, this process would not have been undertaken without the County Board of Supervisors' leadership and continued commitment to climate protection.

The County Administrator and agency directors on the Climate Executive Committee (General Services, Community Development, and Public Works agencies) provided oversight and critical guidance to the Plan's development. Staff from these three agencies also provided input as members of the Climate Action Team supporting the Climate Executive Committee. General Services Agency staff took the lead on the development of the Plan, and Community Development and Public Works staff provided ongoing support for the Plan's development.

Additional thanks go out to the County agency and department heads for their support and for the work of their staff who served as Agency Climate Coordinators. The Agency Climate Coordinators attended meetings, participated in interviews, discussed the greenhouse gas reduction measures, and reviewed preliminary versions of the Plan. In total, 24 Agency Climate Coordinators, representing 19 County agencies and departments, met regularly to provide the input and insight that enable this Plan to meet the needs of diverse County agencies.

Thank you to the Community Development Agency staff who developed the *Alameda County (Unincorporated Areas) Community Climate Action Plan* and took the time to ensure coordination between these two sister plans.

Thank you to the hundreds of employees who took an interest in the Plan and suggested ways to reduce greenhouse gas emissions throughout the wide range of County services and operations.

A special thank you to all the County employees who provided data and expertise crucial to the development of the greenhouse gas emissions inventory on which the Plan is based.

Finally, thank you to the Bay Area Air Quality Management District for providing grant funding towards the development of the Plan. Thank you to StopWaste.Org for consistent promotion and support of climate protection planning in Alameda County and for providing funding towards the greenhouse gas emissions inventory.

The County dedicates the *Alameda County Climate Action Plan for Government Services and Operations* to the residents of Alameda County as well as to the future generations of County residents who will benefit from these efforts.

Board of Supervisors

- Scott Haggerty, District 1 Supervisor
- Gail Steele, District 2 Supervisor
- Alice Lai-Bitker, District 3 Supervisor
- Nate Miley, District 4 Supervisor
- Keith Carson, District 5 Supervisor

Climate Executive Committee

- Susan S. Muranishi, County Administrator
- Chris Bazar, Director, Community Development Agency
- Aki K. Nakao, Director, General Services Agency
- Daniel Woldesenbet, Director, Public Works Agency

Climate Action Team

- **Community Development Agency:** Jamie Benson, Darryl Gray, James Gilford, Cindy Horvath, Bruce Jensen, Carole Kajita, Howard Lee, Albert Lopez, Elizabeth McElligott
- **General Services Agency:** Ryan Bell, Carolyn Bloede, Emily Sadigh
- **Public Works Agency:** Kwablah Attiogbe, Jim Browne, Nanci Erven-Collins, Justin Laurence, Lourdes Lupe Serrano

GSA Sustainability Program

GSA Sustainability Program staff, led by Carolyn Bloede, played a key role in all elements of the development of the climate action framework. Special acknowledgment is due to Ryan Bell and consultant Melissa Capria for their countless hours spent writing the Plan, leading the cross-agency climate planning process, and analyzing the emissions reduction measures. All members of the Sustainability Program were instrumental in completing the process, including:

- Ryan Bell
- Carolyn Bloede
- Karen Cook
- Emily Sadigh
- Laura Speare

Agency Climate Coordinators

- **Assessor:** Kathy Vaquilar
- **Auditor-Controller:** Sabrina Amador
- **Child Support Services:** Sandee Rosenberg
- **Community Development:** Donna Eoff
- **County Administrator:** Mona Palacios
- **County Counsel:** Becky Taylor
- **District Attorney:** David Budde
- **Fire Department:** Charles Palmer, Alan Evans
- **General Services:** Ryan Bell
- **Health Care Services:** Pam Evans, Mona Mena
- **Human Resource Services:** Lilybell Nakamura, Ray Johnson
- **Information Technology:** Charles Johnson
- **Library:** Tiona Smith
- **Probation:** Marilyn Adamson, John Keene, Jila Hicks
- **Public Defender:** Anayat Mehrabi
- **Public Works:** Kwablah Attiogbe, Nanci Erven-Collins
- **Registrar of Voters:** Benita Cox
- **Sheriff's Office:** Don Buchanan
- **Social Services:** Dina Brockman, Don Edwards

County Employees

Hundreds of County employees provided suggestions for greenhouse gas emissions reduction measures. Additional input, data, information, and guidance were provided by employees from many divisions, departments, and agencies who are subject area experts.

CONTENTS OF THE CLIMATE ACTION PLAN

The **Executive Summary** for the *Alameda County Climate Action Plan for Government Services and Operations* is a separate document that can be found on the Alameda County sustainability website at www.acsustain.org/what/climate/plan.htm.

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CLIMATE ACTION FRAMEWORK

The *Alameda County Strategic Vision*[1] prioritizes Environment/Sustainability as a guiding principle for County operations and service delivery and lays out several Countywide sustainability strategies, including taking action on climate change. The Environment/Sustainability goals in the Strategic Vision reflect the fact that global climate change constitutes one of the most significant threats faced by the County today. Rising temperatures and changing climate patterns will directly affect core County service areas, including public health, safety, the local economy, and quality of life. The County will be called on to address these impacts as it strives to fulfill its vision of creating one of the best communities in which to live, work, and do business.

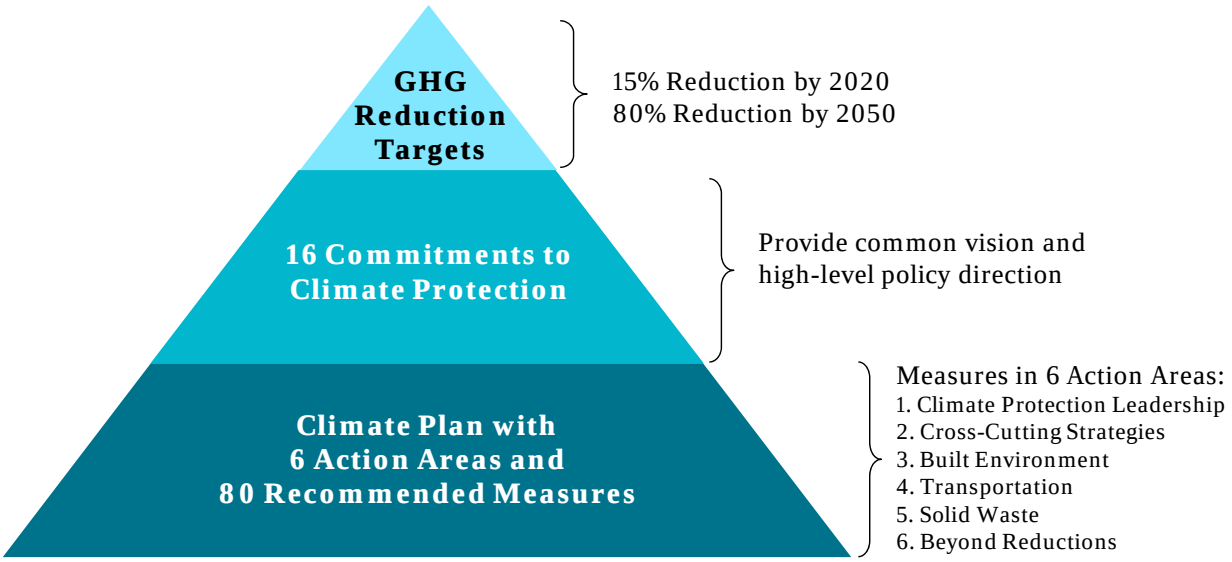
Recognizing the magnitude of the climate change challenge, the Board of Supervisors adopted the Climate Change Leadership Strategy Resolution in 2006. This resolution formally commits the County to reducing greenhouse gas (GHG) emissions, integrating climate considerations into County plans and processes, establishing GHG reduction targets, and developing a Climate Action Plan. A key goal of this climate change leadership strategy is to reduce the GHG emissions created from County operations and from providing services to the public.[2]

In May 2010, the Board passed a resolution formalizing a climate action framework for reducing emissions from government services and operations. As illustrated in Figure 1, this framework includes:

- **GHG emissions reduction targets**. The targets call for reducing GHG emissions by at least 15% by 2020 and 80% by 2050. These targets are consistent with State recommendations for local governments and with the Board of Supervisors' 2007 endorsement of the nationwide *Cool Counties Climate Stabilization Declaration*.
- **16 Commitments to Climate Protection**. The Commitments provide a common vision and high-level policy direction for how the emissions reduction targets will be met.
- **The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan)**. The Plan lays out 80 specific measures that the County, individual agencies, and employees can take to achieve the Commitments. The measures build upon existing County initiatives and prioritize actions that create more efficient government operations. They address emissions from the County's buildings, transportation, and solid waste disposal as well as broader organizational and policy issues.

[1] The Strategic Vision was adopted by the Board of Supervisors in 2008.
[2] The *Alameda County (Unincorporated Areas) Community Climate Action Plan,* developed through a parallel process, addresses the emissions from residents and businesses in the unincorporated communities of the County. In addition, all cities in Alameda County are developing or have developed climate action plans.

FIGURE 1: CLIMATE ACTION FRAMEWORK FOR GOVERNMENT SERVICES AND OPERATIONS



Considerable effort was devoted to ensuring the climate planning process was comprehensive and collaborative. The climate action framework was developed through an inclusive effort, led by the General Services Agency's Sustainability Program. This process involved representatives from 19 County agencies in every aspect of the framework's development, from identifying the GHG reduction measures and refining the Commitments to Climate Protection to prioritizing the emissions reduction measures.

Implementation of the Plan will be coordinated by the Climate Executive Committee, whose members include the County Administrator and agency heads. County agencies will integrate climate considerations into their business plans and select measures to implement in their operations. At the same time, core agencies will begin developing the programs and tools needed to facilitate adoption of Countywide measures. Progress will be monitored through performance indicators, agency progress reports, and regular updates to the Board of Supervisors.

The climate action framework provides strong and specific direction for reducing the County's carbon footprint by 2020. It also lays the organizational and policy groundwork for achieving an 80% reduction by 2050. The Plan, however, is a living document. The emissions reduction measures recommended here reflect the technologies, strategies, and approaches available in 2010. It will be important to reassess the Plan periodically to ensure it reflects the best available options as new technologies and strategies are developed.

GETTING STARTED WITH THE CLIMATE ACTION PLAN

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) lays out a blueprint for how the County will reduce its greenhouse gas (GHG) emissions. It is written for County employees and elected officials. Other local governments and the public may also be interested in the Plan as a source of best practices or as a model for a climate planning approach. Readers may want to focus on specific sections based on their interests and how they are using the Plan in their work. Below are more details on the Plan's structure as well as suggestions for which sections may be most applicable for different audiences.

DESCRIPTION OF KEY CONTENTS

The **Executive Summary** is a separate document that is available online at www.acsustain.org/what/climate/plan.htm. It provides an overview of the Plan, including the needs it addresses and the anticipated benefits of implementing the Plan. The Executive Summary introduces Alameda County's 16 Commitments to Climate Protection and lists the 80 recommended GHG emissions reduction measures.

Chapter 1 provides background that is useful for understanding the context for the Climate Action Plan. It discusses climate change impacts and the opportunities that emerge from taking action to reduce GHG emissions. It describes the County's current and predicted future emissions levels and discusses the GHG reduction targets that the County is striving to achieve by 2020 and 2050 to help prevent the worst impacts of climate change. Finally, it highlights actions the County has already undertaken to address climate change.

Chapter 2 lays out the County's vision for a low-carbon future, including the specific Commitments to Climate Protection the County has made to reduce its GHG emissions by 2020. This chapter describes the methods used to choose and prioritize the recommended GHG emissions reduction measures. It also explains the organizational structure used to organize the emissions reduction measures in the Plan.

Chapters 3 to 8 detail how the County will reduce emissions by taking action in six areas. Each chapter focuses on one action area, providing additional information on the strategies that will be employed within that action area and describing the recommended GHG emissions reduction measures under each strategy.

Chapter 9 covers the approach that will be used to implement the Plan, including key roles and responsibilities. It provides guidance on the ongoing monitoring and reporting that will be necessary to track the Plan's progress. It also discusses the financial and other impacts of taking action on climate protection.

Appendices A to H provide additional resources. These include climate change resolutions adopted by the County; actions being taken at other levels of government; existing County initiatives; methodologies employed in developing the Plan; Alameda County's mission, vision, and values; actions individual employees can take to reduce emissions; and a glossary of terms and abbreviations.

RECOMMENDED ENTRY POINTS FOR READERS

Every County employee has a role in implementing the Climate Action Plan and is invited to read it in its entirety. In addition, everyone is encouraged to review Chapter 1, which includes an introduction to climate change, its impacts, and the policy foundation for the County's climate protection activities. This section points groups of readers to sections of the Plan that they may find most relevant.

Board of Supervisors and Supervisors' Offices: The Executive Summary[3] provides an overview of the climate action framework, including the County's GHG reduction targets, Commitments to Climate Protection, and the specific emissions reduction measures that will be pursued to fulfill those Commitments. Board members may also be interested in Appendix A: Alameda County Resolutions Related to Climate Protection.

County Executives: For those supervising implementation of the Plan, the Executive Summary[4] offers a convenient overview of the Plan and contains the complete list of the emissions reduction measures that the County will pursue. The introductions to Chapters 3 to 8 provide an overview of the areas in which action will be taken. These chapters contain additional details on the measures to be implemented. Chapter 9 explains how the Plan will be implemented and the responsibilities of agencies and individuals.

County Staff Assigned to Implement a Measure: Employees with responsibility for implementing specific measures or integrating the Climate Action Plan into their agency's operations will want to read the bulk of the Plan. They should begin with the overview in the Executive Summary.[5] Chapter 2 will be of particular interest for its discussion of the Commitments the County has made to climate protection, how the recommended emissions reduction measures were derived, and how the emissions reduction measures are organized. The relevant sections of Chapters 3 to 8 should be reviewed for information on the specific measures to be implemented. Chapter 9 contains the detailed discussion on how the Plan will be implemented and information on monitoring progress.

County Employees: For County employees not currently assigned to implement a measure, the best entry point to the Plan depends on individual interests. Chapter 1 discusses why the County is taking action to reduce emissions and how climate change will affect County operations.

The Executive Summary's list[6] of the County's Commitments to Climate Protection and the 80 prioritized measures may spark thoughts about areas in which individuals would like to get involved. Employees wanting more information may be interested in the description of the action areas and strategies in Chapters 3 to 8. If a particular measure is of interest, more details can be found in these chapters.

Appendix G: Employee Actions to Reduce Greenhouse Gas Emissions provides a list of sample actions that individuals can take over the course of the workday to advance the Plan and help the County reduce its carbon footprint.

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[3] The Executive Summary is provided as a separate document that is available online at www.acsustain.org/what/climate/plan.htm.
[4] Ibid.
[5] Ibid.
[6] Ibid.

Community Members: The Executive Summary[7] provides a comprehensive overview of the contents of the Plan. The monitoring and reporting discussion in Chapter 9 outlines the updates that the public can expect to see as the Plan is implemented.

Other Local Governments: Local governments preparing climate plans will find the discussions in Chapter 2 and Appendix D: Methodology Notes about how the Plan was developed particularly useful. In addition, Chapters 3 to 8 give detailed descriptions of measures, many of which could translate to other communities.

Additional information on the County's climate protection and other sustainability efforts can be found at www.acsustain.org.

[7] The Executive Summary is provided as a separate document that is available online at www.acsustain.org/what/climate/plan.htm.

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CHAPTER 1: INTRODUCTION AND BACKGROUND

Alameda County has a long history of taking action to preserve natural resources for current and future generations. Today, global climate change is one of the most significant threats facing the County, one that will have far-reaching impacts on the entire community and affect the County's ability to deliver services. By acting now, the County can reduce the severity of these impacts as well as take advantage of the opportunity to rethink how government services are provided in the twenty-first century.

Located on the eastern shore of the San Francisco Bay, Alameda County has a population of 1.56 million, making it the seventh most populous county in the State of California. The Alameda County government serves a dual role within its jurisdiction. It acts as both a municipal authority – providing services to the unincorporated communities within its boundaries (e.g., infrastructure, law enforcement, emergency services, and libraries) – and as the regional institution that provides an array of state and local services to all residents (e.g., foster care, public health, elections, property assessment, criminal prosecution, tax collection, and vital statistics). The County government employs approximately 9,000 people, is located in over 150 facilities, and maintains a municipal infrastructure system (e.g., roads, bridges, pump stations, streetlights, and signals).[8]

Providing these services to the community requires energy and fuel use and generates waste, which leads to the release of the greenhouse gases (GHG) responsible for global climate change. But with challenge comes opportunity. Because of its size, reach, and breadth of functions, the County has immense potential to be an innovator in the area of climate protection.

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) builds on existing initiatives to lay out a course for how the County will reduce its contribution to climate change and, by extension, the impact climate change will have on County services. The Plan also supports other County goals, such as using taxpayer resources efficiently, harnessing renewable energy to power facilities sustainably, providing residents with convenient access to services, and reducing the amount of waste sent to landfills. By taking the actions recommended in the Plan, the County will create financial savings, keep dollars in the local economy, support new jobs, improve air quality, and attract and retain dedicated public servants.

This chapter contains an introduction to the Climate Action Plan. This includes discussions of climate science; the County's contributions to, and potential impacts from, climate change; and the policy foundation on which the Plan was developed.

THE CLIMATE ACTION PLAN: A BRIEF INTRODUCTION

The Alameda County Board of Supervisors has shown strong leadership on environmental sustainability and climate protection. They have adopted a Strategic Vision for the County and policies to ensure environmental stewardship.[9] The Plan supports the County' Strategic Vision and translates the Board of Supervisors' resolutions on climate protection (R-2006-204) and

[8] For more information about Alameda County and the County government, see www.acgov.org.
[9] For a list of sustainability-related policies adopted by the County, see www.acsustain.org/how/policies.htm.

GHG emissions reduction (R-2007-336) into tangible action.[10] Specifically, the Plan was designed to:

- Outline the steps that the County will take to reduce its own GHG emissions at least 15% (and as much as 30%) by 2020;
- Put the County on a path towards meeting its target of reducing GHG emissions 80% by 2050;
- Provide County agencies with a menu of actions they can take to increase the efficiency and sustainability of their operations;
- Empower employees to take action to improve the sustainability of their work environment;
- Demonstrate Alameda County's environmental leadership; and
- Contribute to regional, state, and international efforts to reduce GHG emissions.

The Plan focuses on the GHG emissions released in the course of providing County services to the public. A parallel process has been undertaken to address GHG emissions from the unincorporated communities under the County's jurisdiction.[11] Additionally, each of the cities within Alameda County has undertaken a similar planning process to address climate change. Ongoing efforts are being made to harmonize local strategies in order to maximize the region's overall GHG emissions reductions.

The Climate Action Plan was developed through an inclusive process involving employees from all County agencies. The process ensured that the Plan built on current agency initiatives, that the recommendations included fit with existing operations, and that all agencies feel ownership and are positioned to begin immediate implementation.

The resulting set of strategies, emissions reduction measures, and supporting actions will guide the County's emissions reduction and sustainability efforts through 2020. The County's efforts to reduce GHG emissions will include broad initiatives rolled out Countywide, measures for agencies to integrate into their internal operations, and actions that individuals can take within the course of their daily activities.

The GHG reduction activities are focused in six areas. The Climate Protection Leadership action area contains the policies, organizational structures, and proposals for monitoring and reporting on progress that will provide the critical foundation for meeting Alameda County's long-term GHG reduction targets for government services and operations. The Cross-Cutting Strategies action area groups together those emissions reduction measures that each individually affect multiple sources of emissions. The following three action areas – Built Environment, Transportation, and Solid Waste – focus on reducing emissions from operating buildings, from how employees travel to work or on the job, and from the waste generated at County facilities. The final action area, Beyond Reductions, addresses how the County can remove greenhouse gases from the atmosphere (carbon sequestration) and prepare for the impacts of climate change (adaptation).

Although the Climate Action Plan outlines actions for the County to implement, it is not a detailed implementation plan. Additional planning will be needed to develop successful programs based on the emissions reduction measures and their suggested next steps.

[10] See Appendix A: Alameda County Resolutions Related to Climate Protection and the Alameda County's Response to Climate Change section later in this chapter for more information on these resolutions.
[11] See the *Alameda County (Unincorporated Areas) Community Climate Action Plan*, available at www.acsustain.org/what/climate/plan.htm.

The Plan focuses on reducing emissions (mitigation) rather than on how the County can adapt to the impacts of climate change, such as sea-level rise and temperature increases (adaptation). It does include some of the initial steps the County should take in order to prepare for those impacts. In addition, many of the emissions reductions measures will make the County's operations more resilient to the effects of climate change. For example, becoming more water-efficient will decrease the impact of droughts.

Implementing the Plan will put the County on track to meet its GHG emissions reduction targets and create a more sustainable organization, one that is prepared to continue providing high-quality services in a changing world. Meeting the County's GHG reduction targets will require the participation of all agencies, departments, and employees. It will also require early action, innovation, and an examination of all aspects of how the government operates to ensure that services are being delivered as efficiently and effectively as possible. In the end, the cumulative effect of the Plan will be a transformation of the County's operations to systems that are more efficient, resilient, and sustainable.

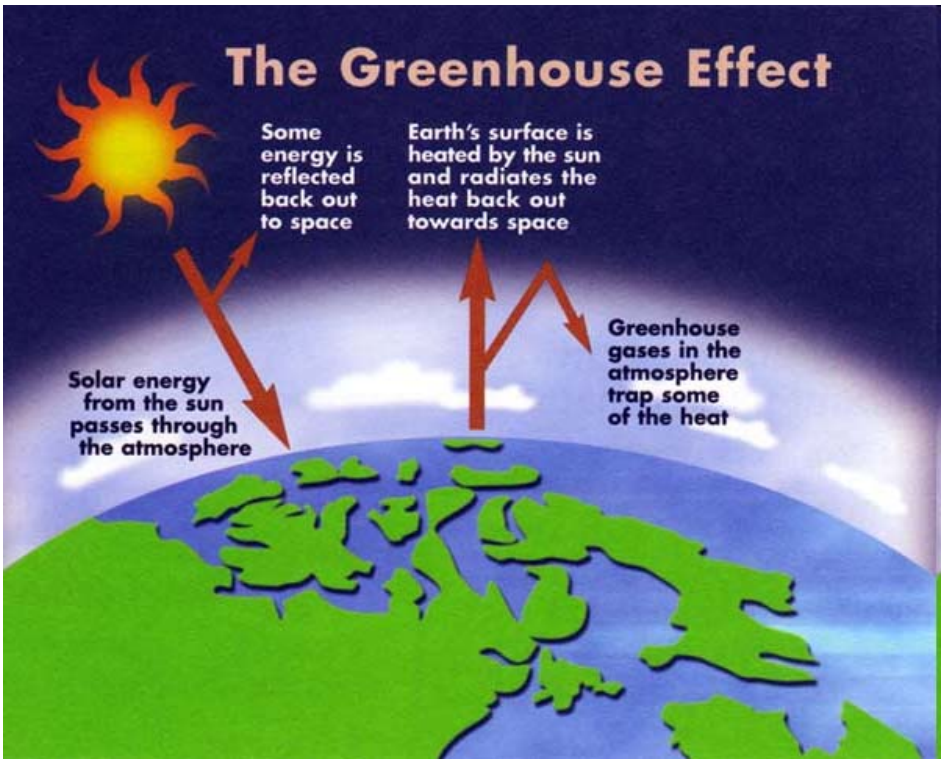
CLIMATE CHANGE AND ITS IMPACTS

A balance of naturally occurring gases makes up the Earth's atmosphere and regulates global climate patterns and temperatures. A subset of these gases (known as greenhouse gases) play a role similar to those of the glass in an agricultural greenhouse. They allow sunlight to pass through the atmosphere to reach the planet but trap heat close to the surface, preventing it from radiating into space. This phenomenon, known as the greenhouse effect, is illustrated in Figure 2. The natural greenhouse effect maintains the temperatures at the surface of the Earth in a range that supports life.

Human activity, most notably the burning of fossil fuels like coal, gasoline, and natural gas to produce electricity, power vehicles, and heat buildings, introduces large amounts of carbon dioxide and other greenhouse gases into the atmosphere. These gases intensify the natural greenhouse effect, causing global average surface temperatures to rise (global warming), which leads to changes in global climate patterns (climate change). Disrupted climate patterns will have an impact on public health, social and economic systems, and the environment. Therefore, local action and civic leadership – along with national and international efforts – are needed now to reduce GHG emissions levels and protect the quality of life of County residents.

Climate change is different from normal variations in weather patterns. Weather refers to atmospheric conditions (wind, temperature, humidity, pressure, cloudiness, precipitation) at a specific time and place. It changes hour-to-hour and between seasons, but over decades and centuries, seasonal weather patterns remain fairly constant. Climate change, on the other hand, refers to a shift in average atmospheric conditions over a longer period of time. Temperatures in a single year, or an individual storm event, are a reflection of current weather conditions. Temperatures that are consistently higher than normal – or storms that occur with greater frequency – over the course of a decade or more, likely indicate a shift in climatic conditions.

FIGURE 2: ILLUSTRATION OF THE GREENHOUSE EFFECT[12]



Climate Change Is a Reality

Detailed reports from the United Nations International Panel on Climate Change,[13] the U.S. Global Change Research Program,[14] and other government and academic researchers state that atmospheric GHG concentrations have increased dramatically since the 1700s and now far exceed pre-Industrial Revolution levels. Atmospheric data show that concentrations of carbon dioxide (CO_2), the most prevalent GHG, have increased approximately 35% since the Industrial Revolution, from 280 parts per million in 1750 to approximately 385 parts per million in 2008.[15]

At the same time, physical and temperature evidence indicate that the planet is warming. For example, all but two of the years between 1997 and 2009 were classified as the warmest on record.[16] Glaciers are slowly disappearing. The area of sea ice that covers the ocean in the Arctic is contracting. Freezing seasons are shorter. Winter snowpack is shrinking.

[12] Parks Canada, "Why Is Our Climate Changing," www.pc.gc.ca/docs/v-g/ie-ei/cc/climate.aspx (accessed April 7, 2010).
[13] Reports and statements from the International Panel on Climate Change are available at www.ipcc.ch.
[14] The U.S. Global Change Research Program was formerly known as the U.S. Climate Change Science Program. See www.globalchange.gov for reports.
[15] Blasing, T.J., "Recent Greenhouse Gas Concentrations," Carbon Dioxide Information Analysis Center, cdiac.ornl.gov/pns/current_ghg.html (accessed on April 7, 2010).
[16] Extrapolated from temperature data produced by the Goddard Institute for Space Studies, data.giss.nasa.gov/gistemp/graphs/Fig.A2.txt (accessed on May 17, 2010).

Scientific consensus points to three key findings related to the earth's changing climate:

- Global average temperatures have increased markedly over the last 100 years;
- Human-induced GHG emissions are the primary driver behind this temperature increase; and
- Increased global temperatures have already begun to change the earth's physical and biological systems.

Emissions scenarios for the coming century indicate that atmospheric GHG concentrations will continue to increase in the future and that this will be accompanied by additional increases in temperatures. Climate models differ on the exact magnitude of the problem, but all agree that some degree of climate change is inevitable.[17] However, most climate scientists also agree that the most devastating impacts of climate change can be avoided if atmospheric GHG concentrations are kept below 350 to 400 parts per million. This is called the climate stabilization goal. Reaching this goal will require significant reductions in global GHG emissions, at least 80% by 2050.

Challenges Posed by Climate Change

Alameda County will confront a number of the effects of climate change in the normal course of its operations. The County government is responsible for assisting vulnerable populations (such as the elderly, low-income, and disabled), protecting public health and safety, promoting economic vitality, and improving the quality of life of its residents. The predicted and already-observed effects of climate change in California and around the world will add additional challenges to carrying out these responsibilities.

More frequent and intense weather events, particularly storms during the winter rainy season, will **increase risks of flooding, storm damage, and landslides**. Similarly, there will be an **increased risk to coastal infrastructure from sea-level rise and storm surges** that extend floodplains inland and place additional stress on levees and infrastructure. The Public Works Agency, emergency response agencies, and social service providers will be called on to respond to these challenges.

During the summer, less rain and warmer temperatures will **increase the length, duration, and frequency of summer droughts**. This will **increase the risk of wildfires**, which the County Fire Department will have to respond to and could have a dramatic personal and financial impact on local communities. These drought cycles will also **increase stress on local water systems**. Declining snowpack in the Sierra Nevada (the main source of the County's water) will reduce water supply at the same time warmer temperatures are causing an increase in demand.

Warmer temperatures and droughts will also **disrupt natural ecosystems and agricultural activities**, and promote the **spread of pests and diseases that attack vegetation**. This will have an impact on the agricultural and other sectors of the local economy – issues that the Community Development Agency will need to address.

Higher temperatures will also lead to **increases in heat-related illnesses** such as heat exhaustion, stroke, and other diseases exacerbated by warmer temperatures. At the same time, warm weather will lead to **more "bad air days"** since higher temperatures promote the formation of ozone and smog, which irritate the lungs and are especially hard on people with

[17] Best-case scenarios assume low population growth, an increase in clean technologies, and low GHG emissions, while worst-case scenarios predict high population growth and an increase in fossil fuel dependence.

asthma and other respiratory ailments. Additionally, warmer temperatures will **expand the range of pests and tropical diseases** (like mosquitoes that carry West Nile Virus). These effects will place an increased burden on the County's health care system.

These impacts of climate change will have an adverse effect on the local economy, public health and safety, and the overall quality of life of County residents. The more greenhouse gases that are released, the more acute the impacts will become. Unfortunately, these effects will have a disproportionately high impact on the most vulnerable communities that are least able to adapt. In addition, property and economic losses will reduce the County's revenue base at a time when expanded services will be needed.

Additional Benefits Provided Through Climate Protection Actions

Taking action to protect the climate presents the County with new avenues for advancing fundamental County goals and priorities.[18] Actions that reduce GHG emissions often provide additional benefits such as increasing the efficiency and effectiveness of the County's operations and service delivery.

Many of the actions lead to tangible **cost savings**. These arise from measures that promote the efficient use of energy and resources (e.g., decrease fuel and electricity use in buildings and vehicles) and from measures that decrease demand for purchased materials, such as paper and office supplies. Many investments can be made today that yield long-term financial savings or protection from the risk of fluctuating prices in the future.

Actions to reduce GHG emissions **increase resilience to natural disasters**. For example, careful facility siting can both minimize the risk of costly flood damage and reduce the travel needed to access government services as fuel costs increase. Water efficiency also shields the County from water cost increases in drought years.

At the same time, actions taken to reduce GHG emissions also **increase employee productivity and reduce healthcare expenses**. For example, green building standards improve indoor air quality because green building materials release fewer harmful chemicals. Locating offices near transit or bike routes makes it easier for employees to incorporate exercise into their commutes. More efficient vehicles release fewer air pollutants, leading to **better air quality**, which in turn leads to **improved respiratory health for residents**.

Climate protection also provides many opportunities to **create a highly desirable workplace** and boost employee morale. Actions that increase comfort and flexibility in the work environment, such as providing natural light, alternative work locations, and flexible hours can be a selling point in **attracting and retaining high-performing employees**.

A green workplace provides residents with **improved access to services**. For example, alternative work arrangements (such as a 9/80 schedule) allow County offices to stay open later in the evening, enabling residents to access services after work. Increased use of electronic and Internet-based processes both reduce paper use and increase the accessibility of services. Tracking and reporting on sustainability indicators **increases the openness and the accountability of County government**.

[18] Additional benefits associated with the GHG reduction measures included in the Plan are referred to as co-benefits.

The Plan also **promotes the economic vitality of the local economy and creates green jobs**. As the County implements cutting-edge emissions reduction projects, its employees and local companies will have an opportunity to work with promising new technologies and develop new skills. Sustainable purchasing policies also benefit the community by supporting local businesses.

Finally, global climate change is one of the most critical issues threatening long-term human and environmental health, social well-being, and the economic vitality of the global community. Therefore, the County has an ethical imperative to limit the impact of global warming under its **public protection** mandate.

ALAMEDA COUNTY'S RESPONSE TO CLIMATE CHANGE

Alameda County has a long history of promoting environmental sustainability, including recognizing the severity and magnitude of the threat posed by climate change and the County's responsibility to take action to reduce GHG emissions. In doing so, the County has joined a large and growing number of local, state, federal, and international government bodies who have pledged to take action to reduce greenhouse gas emissions.[19]

In 2008, the Board of Supervisors adopted the *Alameda County Strategic Vision* to provide County agencies with high-level direction and a unifying framework to guide County policy and resource decisions.[20] Within the Strategic Vision, Environment/Sustainability is called out as the overarching area of focus, one that ties together the other priority areas. This reflects the County's long history of integrating environmental protection into policies and procedures.

> *A healthy environment: our health is linked to it, our economy depends on it, and it makes Alameda County a beautiful place to live. When the County delivers public services and shapes land-use policies, we affect local and global ecosystems. By integrating sustainable strategies into service delivery, County policies, and regional partnerships, Alameda County will prioritize the preservation and restoration of our ecosystems.*
>
> – From the *Alameda County Strategic Vision* Environment/Sustainability Section Introduction

The emissions reduction measures identified in the Climate Action Plan directly address the strategies identified in the Strategic Vision and help fulfill the Environment/Sustainability goals to:

- Engage regional, state, and federal policy-making bodies to promote policies and allocate resources to support ecosystem preservation and restoration;
- Ensure that the County's operations and services are consistent and comprehensive in prioritizing environmental protection;
- Demonstrate a commitment to environmental stewardship in County policies; and
- Create County-City partnerships to coordinate planning, share best practices, and leverage resources to advance regional sustainability initiatives.

[19] See Appendix B: Action at All Levels of Government for more information on regional, state, federal and international programs and how they might impact the County's operations.
[20] For the full Strategic Vision, see www.acgov.org/strategic.htm.

In 2006, the Board of Supervisors unanimously adopted the Climate Change Leadership Strategy Resolution (R-2006-204), the first climate-change-focused policy to be adopted by the County.[21] This resolution commits the County to take steps to reduce GHG emissions and prepare for the eventual impacts of climate change. It establishes the County's climate protection strategy, calling for an inter-agency approach for reducing GHG emissions and requiring that climate protection be integrated into the County's planning, budgetary, and other processes. Finally, it commits the County to a five-step process for achieving emissions reductions – of which the County has now completed the first three steps. This five-step process entails:[22]

1. Conducting a greenhouse gas emissions inventory and forecast;
2. Establishing a greenhouse gas emissions reduction target;
3. Developing an implementation plan to meet the County GHG targets;
4. Implementing that plan; and
5. Monitoring and reviewing progress.

In 2007, the Alameda County Board of Supervisors voted unanimously to sign the *Cool Counties Climate Stabilization Declaration (R-2007-336)*, which set the County's climate stabilization goal of an 80% reduction in greenhouse gas emissions by 2050. The Declaration encourages other communities to adopt similar targets and to ask the federal government to support climate protection actions. It also commits the County to improving its resiliency to the effects of climate change.[23]

In May 2010, the Board of Supervisors unanimously passed Resolution 2010-170, the resolution establishing the climate action framework for government services and operations. In doing so, the County formally adopted:

- Targets of reducing greenhouse gas emissions by at least 15% by 2020 and 80% by 2050;
- Commitments to Climate Protection as a common vision and high-level policy direction for meeting those targets; and
- The *Alameda County Climate Action Plan for Government Services and Operations* as the blueprint for how the County will fulfill those commitments and reduce its GHG emissions over the next decade.

Finally, the resolution directed County agencies and employees to begin taking action to reduce GHG emissions and laid out key areas of responsibility.

GREENHOUSE GAS EMISSIONS: WHERE WE ARE AND WHERE WE NEED TO GO

The County performed a comprehensive inventory of the greenhouse gas emissions from its operations to inform the development of the Climate Action Plan. This inventory provides an estimate of the County's total GHG emissions (its carbon footprint) and identifies the major sources of those emissions. Additionally, the County forecasted future emissions levels if no actions are taken to reduce those emissions. This forecast informed calculations of the emissions reductions needed to reach the County's targets. This level of analytical rigor provided assurance that the County is focusing its GHG reduction efforts in the right areas.

[21] See Appendix A: Alameda County Resolutions Related to Climate Protection for the full text of R-2006-204.
[22] The five-step process, known as the Five Milestones, was developed by ICLEI – Local Governments for Sustainability for participants in its Cities for Climate Protection Campaign. For more information, see www.iclei.org/index.php?id=10829.
[23] See Appendix A: Alameda County Resolutions Related to Climate Protection for the full text of R-2007-336.

Baseline Emissions Inventory

The GHG emissions inventory identifies the sources, types, and amount of greenhouse gases being released by the County. The baseline emissions inventory represents the starting emissions level against which future changes in GHG emissions levels will be measured. The inventory was used to inform the range and magnitude of GHG reduction measures included in the Plan.

The County chose 2003 as the baseline year for use in the *Alameda County Climate Action Plan for Government Services and Operations*. Between this 2003 baseline year and 2010, a number of large emissions reduction projects were completed, such as solar installations and hybrid vehicle purchases. Analysis of these existing measures in relation to total emissions levels demonstrates the progress the County has already made and provides a better understanding of the additional effort that will be required to achieve the needed emissions reductions.

The inventory focused on the three most prevalent greenhouse gases: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These emissions were aggregated and reported in terms of units of carbon dioxide equivalencies, or CO_2e.[24] All greenhouse gas emissions in the Climate Action Plan are reported in terms of metric tons CO_2e.[25] The emissions sources examined included the County's direct operations (e.g., electricity and fuel use in facilities and vehicles, disposing of waste generated at facilities in landfills) and selected emissions sources associated with those operations (e.g., employee commutes).[26]

The baseline greenhouse gas emissions inventory shows that **62,997 metric tons CO_2e were released in 2003** as a result of the County's operations, services, and related activities. Of these, the largest share (51%) was released by the vehicles used when employees commuted to, and traveled for, work.[27] Emissions from electricity and natural gas use at the County's facilities (e.g., buildings, bridges) were the next largest source of emissions (44%). The decomposition of waste from County facilities, County-operated streetlights and traffic signals, and County flood control pumps and irrigation controllers each released a small portion of the remaining emissions.

Emissions levels by major source and relative contribution to the County's overall carbon footprint are shown in Table 1 and Figure 3. The County's overall GHG emissions levels, and the relative contributions of different emissions sources, are similar to those of other jurisdictions in the region. (The detailed results of the County's greenhouse gas inventory can be found in the emissions inventory reports available at www.acsustain.org/what/climate/footprint.htm.)

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[24] Converting all emissions to CO_2e allows for different gases to be directly compared in terms of their potential to cause global warming. For example, one ton of methane traps 21 times more heat than a ton of carbon dioxide; therefore, one ton of methane is equal to 21 tons CO_2e. Similarly, 1 ton of N_20 equals 310 tons CO_2e.

[25] Metric tons are the international standard for reporting GHG emissions and are used by the federal government and State of California. This has not, however, always been the case in local governments' GHG inventories (including inventories completed by other jurisdictions in Alameda County). Therefore, special care should be taken when comparing emissions levels among jurisdictions or using the numbers reported here in other contexts.

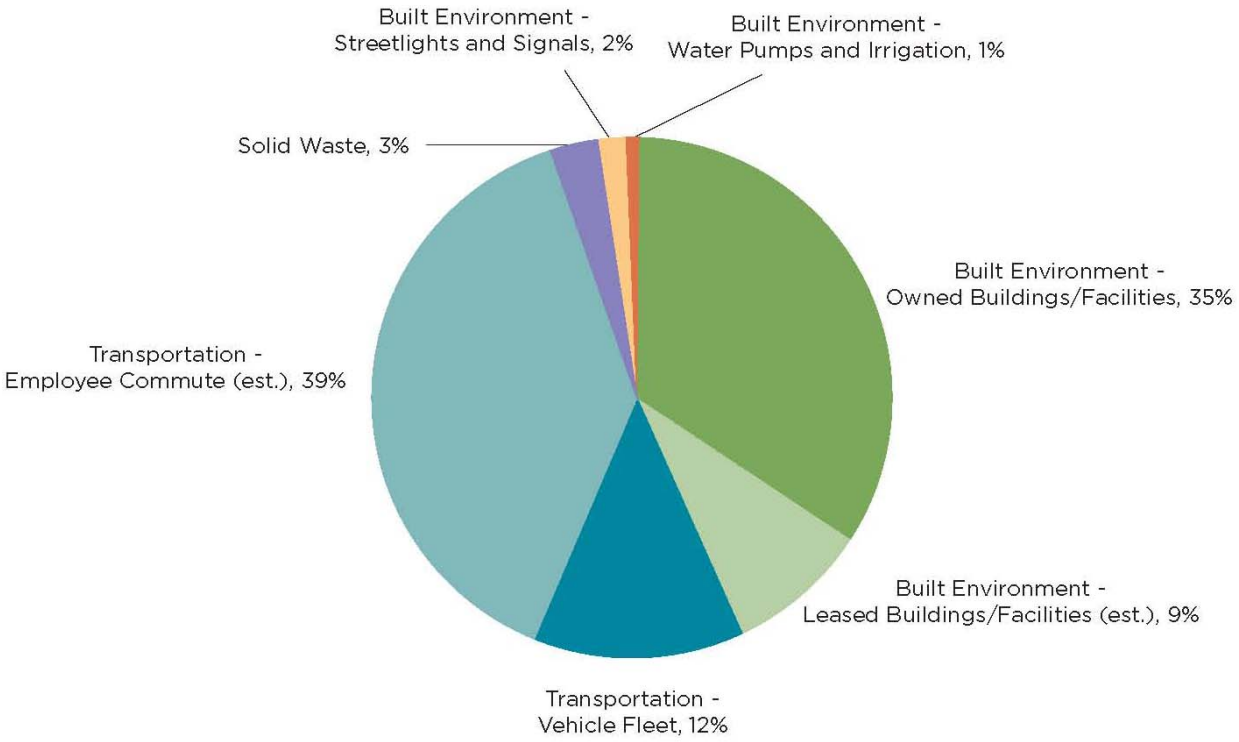
[26] The inventory represents an end-user emissions analysis. That is, it accounts for the items such as the emissions from direct fuel use in County operations, generating and delivering the electricity used at County facilities, and the decomposition of County generated paper and other organic materials in landfills. This is as opposed to a lifecycle emissions analysis that would also include the emissions associated with producing those goods and services (i.e., manufacturing and delivering products and extracting and refining fuels).

[27] This does not include emissions from County employees using their personal vehicles for County business or the emissions associated with the public's traveling to County facilities to access services because accurate data was not available on these emissions sources.

TABLE 1: BASELINE (2003) GREENHOUSE GAS EMISSIONS ALAMEDA COUNTY'S GOVERNMENT SERVICES AND OPERATIONS

Emissions Source	Metric Tons CO_2e	Percent of Total Emissions
Built Environment – Owned Buildings/Facilities	21,821	35%
Built Environment – Emergency Generators	83	<1%
Built Environment – Leased Buildings/Facilities (est.)	5,507	9%
Transportation – Vehicle Fleet	7,721	12%
Transportation – Employee Commute (est.)	24,682	39%
Solid Waste – Owned Buildings	1,538	2%
Solid Waste – Leased Buildings (est.)	278	<1%
Built Environment – Streetlights and Signals	959	2%
Built Environment – Water Pumps and Irrigation	408	1%
Total	**62,997**	**100%**

FIGURE 3: BASELINE (2003) GREENHOUSE GAS EMISSIONS FROM ALAMEDA COUNTY'S GOVERNMENT SERVICES AND OPERATIONS[28]



[28] Emissions sources that contributed less than one percent of the total in Table 1 are combined with other categories in Figure 3.

Greenhouse Gas Emissions Forecast

The County's 2020 emissions reduction target is defined as a reduction below the baseline (2003) GHG level. The County will not only need to take steps to reduce emissions to 15% below what they were in 2003, but also will need to take additional steps to offset the projected increase to total future emissions. Therefore, an assessment of what the total amount of future emissions would be without any climate protection activities is important to accurately determine the total amount of GHG reductions needed to meet the County's GHG reduction target.

The emissions forecast provides an estimate of predicted future changes in GHG emissions. It represents a business-as-usual scenario that shows what future emissions trends will be if no action is taken to reduce emissions at the local, state, or federal level. The emissions forecast completed for the Climate Action Plan estimated total emissions for 2020, the year by which the County government should meet its target of a 15% reduction in emissions below the baseline level.

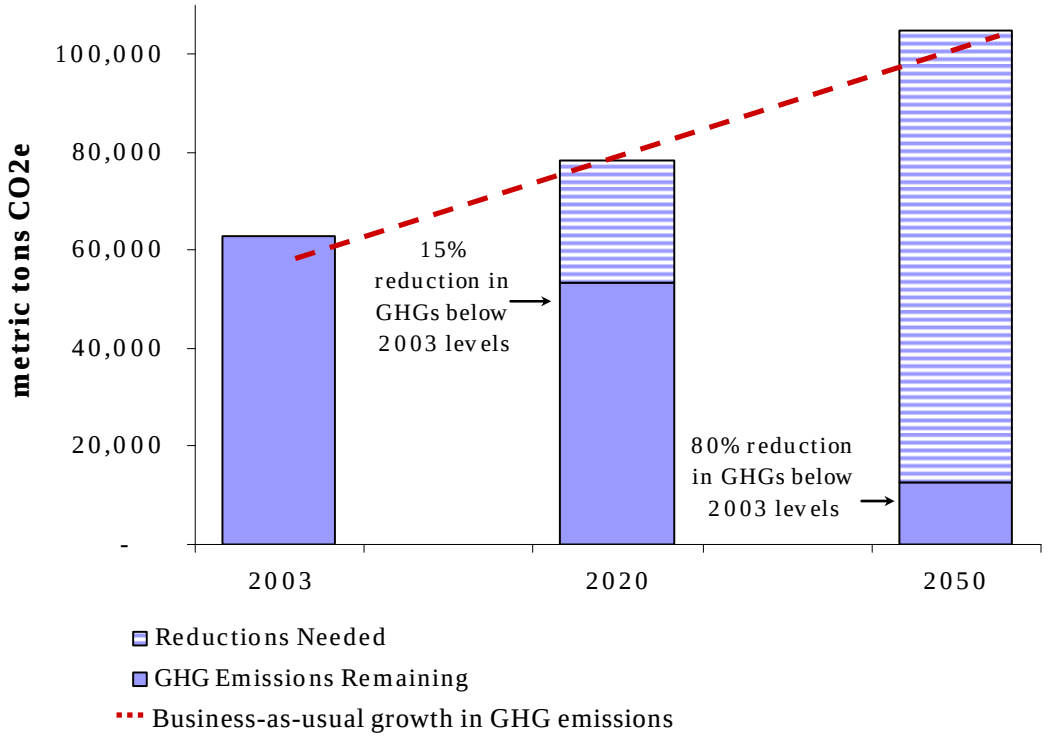
Historically, Alameda County government has grown in response to a growing population and increasing demand for vital services. Over the last two decades, the number of County employees has increased by 1.4% per year.[29] In developing the emissions forecast, future growth rates were projected to continue to follow this trend.

An increase in the number of employees will result in an increase in the GHG emissions from building energy use, transportation, and solid waste disposal. It was assumed that, under a business-as-usual scenario, the space, energy, and travel requirements of new employees would be similar to that of current employees. Therefore, future changes in emissions from County buildings, fleets, and employee commutes were assumed to be directly proportional to the number of people employed by the County. In areas where County operations are not directly related to the number of employees, such as the energy used by streetlights, signals or water pump stations, forecasted changes in GHG emissions were based on historic energy use trends.

Future emissions trends are illustrated in Figure 4. Projected emissions for 2020 are well above 2003 levels. Assuming emissions levels continue to increase at historic levels, the **GHG emissions from government services and operations would increase 24% between 2003 and 2020** to 78,295 metric tons CO_2e.

[29] Alameda County, "County of Alameda Real Estate Master Plan," June 2009. Available at www.acgov.org/acremp.htm.

FIGURE 4: PROJECTED FUTURE GROWTH IN GREENHOUSE GAS EMISSIONS AND ALAMEDA COUNTY'S REDUCTION TARGETS



Long-Term (2050) and Short-Term (2020) Emissions Reduction Targets

The Alameda County Board of Supervisors has adopted a long-term target of reducing GHG emissions 80% by 2050.[30] This target is based on international scientific consensus on what is needed to avoid the most serious impacts of global climate change. For the County government, this will require a reduction of close to 13,000 metric tons CO_2e below the 2003 baseline emissions level.

Meeting this target will require changes in every aspect of how the County conducts business, ranging from energy sources and transportation modes to how the public accesses services. However, these changes do not all need to be made at the same time. Rather, it is important to create milestones and interim targets on the path towards reducing emissions from government services and operations.

The Plan lays out a blueprint for meeting the County's other Board-adopted target of reducing emissions by at least 15% below 2003 levels by 2020.[31] This target is similar to those adopted by other local governments around the country and is the same as the target included in the *Alameda County (Unincorporated Areas) Community Climate Action*

[30] See the *Cool Counties Climate Stabilization Declaration* (adopted under R-2007-366).
[31] The reductions quantified in the Plan achieve a 19% reduction below 2003 levels. For more information, see the Meeting the 2020 Emissions Reduction Target section in Chapter 2.

Plan.[32] The State of California also recommends that local governments establish a 15% GHG reduction target consistent with its AB32 goal of reducing emissions to 1990 levels.[33]

Reducing GHG emissions 15% below 2003 levels in the next 10 years will put the County on the path for achieving its long-range 2050 emissions reduction target. The more aggressive the County is in achieving GHG reductions early on, however, the easier it will be in subsequent decades to meet the long-term target. Reducing emissions by as much as 30% by 2020 may be achievable through the Plan with very robust implementation efforts (e.g., installing a greater number of solar power systems than planned, putting additional resources into encouraging employee participation in actions to reduce emissions).

The next decade, 2010-2020, is only the first decade in a four-decade path towards reaching the Board of Supervisors' long-term target of reducing GHG emissions 80% by 2050. Figure 4 illustrates the magnitude of the emissions reductions needed in comparison to projected business-as-usual GHG emissions levels.

The actions recommended in the Plan set the stage for future reductions. Measures implemented today will continue to yield reductions long after 2020. Institutional change takes time, and many of the measures in the Plan will have an even greater impact in the future as buildings and vehicles are replaced, giving more opportunities to implement new policies and programs. Additionally, many of the measures rely on behavior changes that start small and can have a large cumulative impact over time as they become the norm. Additionally, new GHG-reducing technologies will continue to emerge, along with new regional, state, and federal efforts that will augment and promote change at the local level.

A Strong Foundation: An Overview of Current Achievements

These GHG reduction targets may seem ambitious, but they build on Alameda County's strong history of environmental action. The blueprint for GHG reduction laid out in the Climate Action Plan is not the beginning of the process but rather a natural extension of decades of environmental work that the County has already undertaken. For example, within its own operations, the County government:

- Operates an extensive waste reduction, reuse, and recycling program;
- Is the largest solar power producer of any local government in the United States;
- Has undertaken a number of water conservation efforts (e.g., low-flow toilets, Bay Friendly landscaping);
- Launched projects to increase energy efficiency (e.g., lighting retrofits, motion-sensing lights);
- Piloted advanced clean energy projects (e.g., fuel cell power plant, waste-vegetable-oil powered vehicles);
- Has been recognized as having one of the top 25 greenest fleets is the country;[34]
- Passed bans on the use of persistent bioaccumulative toxins and implemented less-toxic cleaning protocols; and
- Supports a diverse range of agency-specific initiatives (e.g., paper reduction, online service delivery, video-conferencing, and waste reduction).

[32] ICLEI-Local Governments for Sustainability, "2009 Annual Report, Measuring Up: A detailed look at the impressive goals and climate action progress of U.S. cities and counties," 2009.
[33] The Air Resources Board estimates that a return to 1990 GHG levels will require a 15% reduction from current levels and a 30% reduction in the forecasted 2020 levels.
[34] The Government Green Fleets Awards are issued by *Government Fleets* magazine, the U.S. Department of Energy's Clean Cities Coalition, and the 100 Best Fleets in North America program.

The County government has also enacted policies and programs to decrease the environmental footprint of the unincorporated communities under its jurisdictional influence[35] and has worked closely with the cities and special districts within its boundaries to promote a shared vision for a sustainable future. (A list of additional environmental programs instituted by the County and its agencies can be found in Appendix C: Examples of Alameda County GHG Reduction Initiatives, and more information on some of the programs can be found online at www.acsustain.org.)

These past actions place Alameda County in a strong position to move forward with environmental initiatives. Its environmental performance to date also means that many of the easier items, or the "low-hanging fruit," have already been implemented. The County starts from a strong foundation and has a supportive and engaged staff, but will need to continue undertaking bold new initiatives to maintain its reputation as an environmental innovator and succeed in meeting its goals.

[35] See the *Alameda County (Unincorporated Areas) Community Climate Action Plan*, available at www.acgov.org/cda/planning/landuseprojects/climateaction/.

CHAPTER 2: A BLUEPRINT FOR MEETING THE COUNTY'S CLIMATE PROTECTION TARGETS

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) demonstrates the County's commitment to environmental stewardship through creating a practical blueprint for reaching the County's greenhouse gas (GHG) reduction targets and striving to:

- Realize long-term financial savings through the implementation of cost-effective measures to achieve the highest possible levels of energy and resource efficiency;
- Provide the highest quality, most accessible, services to its residents;
- Increase openness and accountability;
- Foster safe, healthy, and resilient communities and work environments;
- Implement consistent policies and programs throughout the County while providing for flexibility in implementation; and
- Coordinate efforts and leverage partnerships both among internal County agencies and throughout the region to maximize the impact of the County's efforts.

As a whole, the strategies and measures contained in the Plan are sufficient to exceed the target of reducing emissions from the County's operations and services by at least 15% by 2020. Measures will address a number of major areas, including emissions from the built environment, transportation, and solid waste. Measures also address the policy and organizational structures that lay the foundation for additional reductions in the future. Finally, the Plan begins to look beyond GHG reductions into the potential for carbon capture and adaptation to the impacts of climate change. Although the Plan relies primarily on steps the County government can take on its own, state initiatives that have a significant impact on GHG emissions from County operations are included as well.

This chapter contains an overview of the Commitments to Climate Protection made by the County, a discussion of how emissions reduction measures were developed and prioritized, and an overview of the organization of Chapters 3 to 8. It also includes a figure showing the action areas and strategies addressed in the Plan.

VISION FOR A LOW-CARBON FUTURE

The old saying, "the only thing that is constant in life is change," applies to organizations as well as individuals. It is safe to assume that Alameda County and its operations and services will look very different in 2020 than they do today. The County will have to respond to a variety of forces, from demographic shifts to economic crises. Meanwhile, climate change will affect the County's operations and its impacts will have visible effects within the community. New state and federal regulations related to carbon emissions will also be adopted. The opportunity presented in the Climate Action Plan is for the County to set its own course towards emissions reductions before these outside forces dictate a course of action that could be more costly or less desirable for the County.

Alameda County's Commitments to Climate Protection (Through 2020)

The County of Alameda has made 16 specific Commitments that will promote climate protection and GHG reductions throughout its operations. These Commitments provide a common vision and high-level policy direction for how the County will meet its 2020 emissions reduction target. They lay out the broad structures, goals, and programmatic areas in which actions will occur. Each of these commitments is supported by specific emissions reduction measures, which are discussed in detail in the following chapters.[36]

In order to advance its climate protection efforts, the County commits to the following:

Climate Protection Leadership

1. Establish a directed cross-agency climate team to coordinate and guide the implementation of greenhouse gas reduction measures.
2. Develop performance-based sustainability indicators and provide the Alameda County Board of Supervisors with regular updates on progress towards meeting the County's climate protection goals.
3. Integrate full-cost financial analysis and greenhouse gas considerations into the County's capital planning and budget processes; decisions surrounding master planning and the location of government services; and operational policies, plans, and decisions.
4. Conduct a review of policies, programs, and procedures to remove barriers to climate protection efforts and ensure that employee participation in these efforts is convenient and efficient.

Cross-Cutting Strategies

5. Develop a Countywide employee education and communications strategy on climate change and incorporate climate protection into the County's public education and outreach programs.
6. Establish a comprehensive integrated purchasing policy that considers the environmental impacts of the manufacturing, use, transport, and disposal of products.
7. Advance an accessible, technologically innovative government service model that features green IT, electronic record keeping and service delivery, and virtual meeting and workspace technologies.

Built Environment

8. Reduce water use 20% by 2020 through implementing a comprehensive efficiency strategy for facilities and irrigation systems.
9. Increase the total share of renewable power being used by the County to 40% by 2020.
10. Establish an energy use reduction strategy to implement the behavior changes required for energy conservation as well as necessary equipment and operational efficiencies.
11. Update the County's green building policies to ensure use of the latest environmental standards for materials and systems in all owned and leased facilities, new construction, and renovations.

[36] See Appendix E: Listing of the Commitments, Measures, and Supporting Actions for a list linking the commitments and associated measures.

Transportation
12. Implement a comprehensive suite of green fleet policies and programs to promote efficiency, alternative fuels, and the infrastructure needed to promote alternative travel modes. 13. Shift 20% of County employees' commute trips from "drive alone" to other options by 2017 through advancing policies and programs that encourage alternative commute options and work arrangements.

Solid Waste
14. Meet the County's 75% waste reduction goal, and develop an implementation and outreach plan that strives to achieve zero waste at County facilities by 2020 through paper reduction, waste prevention, and waste diversion programs.

Beyond Reductions
15. Take advantage of opportunities to capture and store carbon on County property and throughout the unincorporated communities (e.g., tree cover, wetlands, and salt ponds). 16. Convene a climate adaptation workgroup to assess the County's vulnerability to climate change and develop recommendations to minimize those risks.

Meeting the 2020 Emissions Reduction Target

The Climate Action Plan provides a blueprint for how the County will fulfill its Commitments to Climate Protection and meet its 2020 emissions reduction target of reducing GHG emissions by at least 15% below 2003 levels. Each of the Commitments is supported by specific strategies and emissions reduction measures, detailed in the Plan, that the County will implement over the next decade.[37]

Figure 5 illustrates how **the County can meet, or potentially exceed, its 2020 emissions reduction target** through implementing the Climate Action Plan. As the County's GHG emissions are expected to increase over time if no action is taken, the reductions shown in Figure 5 represent what is needed to offset this growth and still reduce emissions below 2003 levels.[38]

The emissions reductions represented by the wedges in Figure 5 include the GHG reductions from measures in the Plan that influence the County's use of electricity and natural gas in its buildings, use of transportation fuel by the fleet and for commutes, and the waste it sends to landfills.[39] The largest County-controlled GHG reduction will come from transportation-related measures (commute trips and fleet use), followed by reductions in emissions from building energy use.

Actions planned for implementation by the State as part of its GHG reduction initiatives will also lead to significant reductions in GHG emissions from the County's operations. These reductions are important in enabling the County to meet its reduction targets. For example, actions such as implementing statewide standards for renewable power and low carbon transportation fuels will contribute greatly to the County's efforts to reduce emissions from its

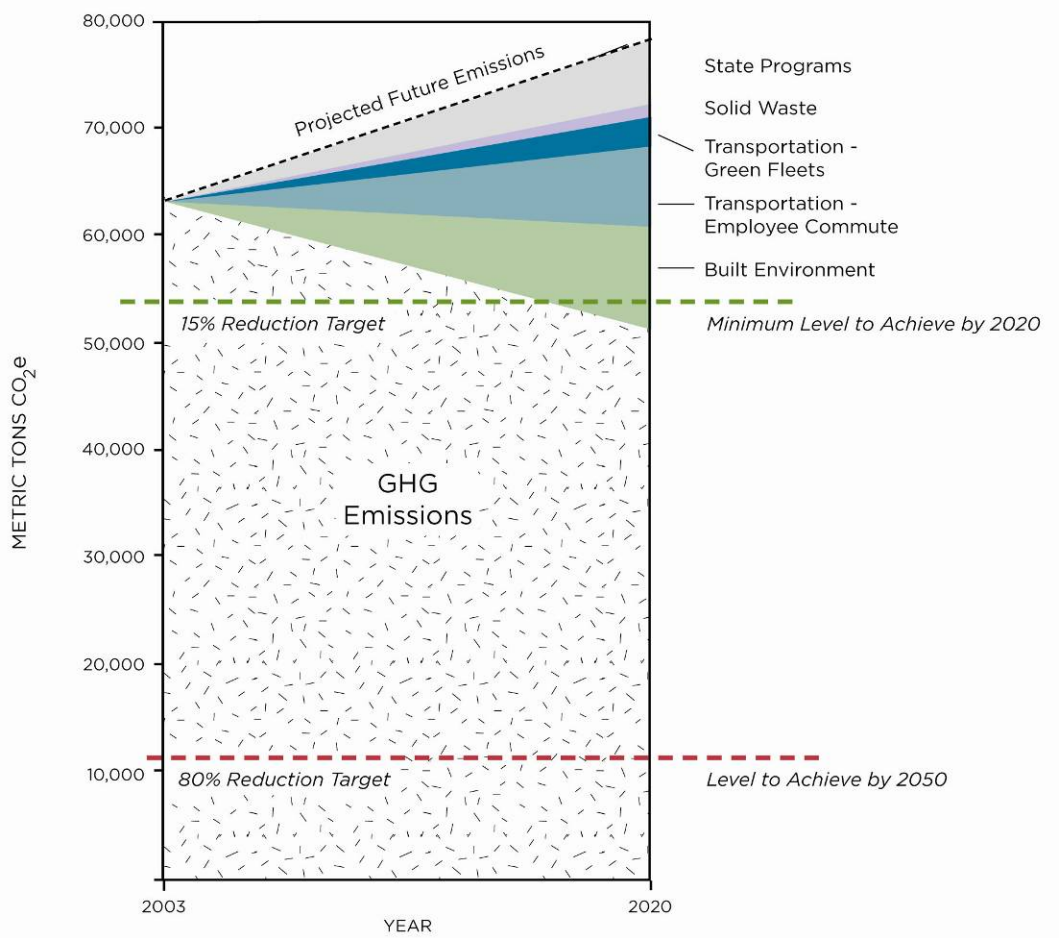
[37] See Appendix E: Listing of the Commitments, Measures, and Supporting Actions for a list of the measures that support each Commitment.
[38] See the GHG Emissions Forecast section in Chapter 1 for more information on projected emissions growth.
[39] This does not include the lifecycle emissions associated with the County's use of goods and services. See the individual action area chapters for a more complete discussion of lifecycle emissions reductions.

buildings and vehicles. Therefore, the impacts of select state-level actions have been included in Figure 5 and the overall emissions reduction estimates.[40]

Although the GHG reductions identified in the Plan will have a significant impact on the County's carbon footprint, the Plan is just the first step in meeting the long-term 2050 emissions reduction target. Additional steps will need to be taken in subsequent decades to reach the 80% reduction level indicated by the lower dotted line on the diagram in Figure 5.

More information on how these emissions reductions were calculated is included in the following sections and in the chapters on the individual action areas.

FIGURE 5: PROJECTED 2020 GREENHOUSE GAS REDUCTIONS



DEVELOPING THE CLIMATE ACTION PLAN

The Climate Action Plan was developed through an inclusive process that drew on a broad range of perspectives provided by representatives of 19 County agencies as well as many other County employees. As a result, the recommended measures either align with current initiatives or were considered by participating agencies to be the most practical and effective approaches to achieve

[40] See the Reporting Potential GHG Reductions section below for more information on the inclusion of state-level actions.

the 2020 GHG emissions reduction target. This participatory process was coupled with an extensive quantification process to determine the impact and priority of each of the recommended GHG reduction measures. This section provides a brief overview of this process (more details are available in Appendix D: Methodology Notes).

Creating a Cross-Agency Planning Process

The Plan's development was guided by the Climate Executive Committee comprised of the County Administrator and the Directors of the General Services, Community Development, and Public Works agencies. Staff from the same agencies met monthly to discuss developments and share ideas as members of the Climate Action Team. The General Services Agency's Sustainability Program managed the day-to-day aspects of developing the Plan, quantified the impacts of the recommended emissions reduction measures, and provided regular updates to County agencies.

The Climate Executive Committee convened a working group of 24 Agency Climate Coordinators (representing 19 County agencies and departments) at the start of the planning process. The Climate Coordinators acted as an advisory committee, reviewing critical decisions and products and acting as a link between the Climate Action Plan development process and the individual agencies. Members of this group provided vital insight into their agencies' operations and reported back on the Plan's development. They also helped identify potential emissions reduction measures, refine and prioritize the GHG reduction measures, and review draft documents. The thoughts and insights of this team were invaluable in crafting the Plan and the overall climate action framework.

Efforts were made throughout the Plan's development to create awareness and support among County employees and engage stakeholders from the diverse agencies within the County. The additional time invested in developing an interdepartmental process resulted in a Plan that is responsive to the unique attributes of County agencies. These efforts will facilitate the process of successfully implementing the Plan and realizing tangible reductions in GHG emissions.

Developing the Commitments and Emissions Reduction Measures

County staff gathered ideas for how to reduce emissions from a wide variety of sources. First and foremost, staff considered existing County policies, plans, and programs, such as the Strategic Vision, Real Estate Master Plan, agency business plans, and other efforts already underway. Basing the emissions reduction recommendations on current initiatives ensures that the Plan is aligned with the County's goals and priorities.

Over 500 suggestions for ways to reduce emissions were made by employees from every County agency. These ideas were submitted through a climate protection Intranet site, outreach events, and personal interviews. The Agency Climate Coordinators also identified GHG reduction opportunities in their agencies and compiled ideas from their coworkers. Gathering ideas from employees was a means to include staff from all agencies in the planning process, raise awareness of and generate support

Most Frequent Employee Suggestions for Reducing GHG Emissions

- Promoting telecommuting, compressed workweeks, and other alternative work schedules;
- Taking steps to reduce paper use;
- Expanding recycling and other waste diversion programs; and
- Turning off lights and using more efficient equipment.

for the County's commitment to sustainability, and ensure that the Plan reflects the needs and interests of all employees.

Additional ideas were also pulled from a variety of external sources, including the State of California's climate action and adaptation plans; climate plans prepared by other jurisdictions, regional agencies, and local government associations; StopWaste.Org's Alameda County Template Climate Action Plan[41]; and best practices guides produced by non-profits and business groups.

The resulting longer list of potential emissions reduction measures was reviewed by the Agency Climate Coordinators, subject area experts, and key stakeholders (i.e., departments that will have key roles in the early implementation stages). These reviewers took part in a series of discussion groups and interviews to provide input on the following factors:

- Relevance and appropriateness of the measures to their agencies;
- Actions that should be included;
- Potential barriers to implementation;
- Ways to combine and separate the suggestions into discrete actionable steps and goals; and
- Tone and wording that should be used throughout the Plan.

Out of these meetings, a shorter list of measures was compiled, vetted by the Climate Executive Committee, and refined into the 80 measures recommended in the Plan. Alameda County's Commitments to Climate Protection were then drafted to encompass the broad themes and overarching goals that arose out of the final list of GHG reduction measures.

Quantifying the Greenhouse Gas Reductions

The next step in developing the Climate Action Plan was to calculate the potential GHG reductions that will be achieved by 2020 through implementing the proposed actions. This was an important step in the process to ensure that the reduction measures identified will in fact reduce the County's emissions and meet the emissions reduction targets.

The GHG reductions associated with each measure were quantified (as feasible)[42] based on:

- Information provided by County employees about existing and proposed programs;
- Research into best practices and the experience of other communities; and
- Quantification methodologies used by other jurisdictions, researchers, and the State.

The results of this analysis indicate that **the County will be able to exceed the 15% GHG reduction target.** Our calculations show that, if all the measures in the Plan are implemented and if the State of California takes the actions that it is currently planning, the County could exceed the target and achieve a 19% reduction below 2003 levels, as illustrated in Figure 5.

However, the approach to estimating GHG reductions was conservative, and **actual emissions reductions could be larger**. For example, if research showed that an energy-efficiency measure could reduce emissions by a 5% to 15% range, the reduction estimate was based on the lower number. Similarly, in cases where measures build on existing efforts, levels of implementation were based on the past performance of those programs – more aggressive implementation will lead to greater reductions (e.g., if alternative fuel vehicles are purchased at

[41] See www.stopwaste.org/home/index.asp?page=963.
[42] For example, the GHG impact of facilitating measures were not quantified, as facilitating measures do not directly reduce GHG emissions, but are necessary to implement other measures. They may remove barriers to emissions reductions, provide information, or change policies and procedures.

faster rate than anticipated). Finally, there were a handful of measures for which reliable information on potential GHG reductions was not available – or where the reductions were not quantifiable because the feasibility of implementing the measure was uncertain (e.g., piloting advanced vehicle technologies).

This conservative approach to estimating the emissions reductions in the Plan provides a reliable assessment of the impact the Plan will have on the County's carbon footprint. Any reductions beyond the 19% quantified will both help the County meet its long-term 2050 emissions reduction target and provide a buffer against the inevitable cases in which barriers arise that prevent the full implementation of some of the measures.

Throughout the quantification process, several guiding principles were adhered to:

- Err on the side of conservative estimates (if an action could have a range of impacts);
- Develop the most accurate calculations possible based on County-specific data;
- Rely on the best available research and professional judgment (in cases where data was unavailable);
- Refine the results to avoid double counting and ensure realistic final conclusions;[43] and
- Identify instances where emissions reductions do not correlate with GHG sources included in the inventory.[44]

Prioritizing the Emissions Reduction Measures

Because not all 80 measures can be implemented at the same time, a prioritization process was conducted to inform the order in which measures will be implemented.[45] An assessment was made for each measure by scoring the measure in eight criteria: GHG reductions, other anticipated benefits, implementation costs, cost savings, staffing level, importance for advancing other aspects of the Plan, support for existing goals, policies, or plans, and acceptability and ease of implementation as rated by individual agencies.[46] Looking at multiple criteria provided a more nuanced perspective of what resources and support will be required to implement each measure and what the full range of benefits will be.

The criteria scores were grouped and added to provide an estimate of each measure's performance in three categories: GHG reductions and co-benefits, resource efficiency, and practicality. The results of this prioritization can be found in the measures tables included in the next six chapters. For each category one to three icons are shown, in increments of half-icons. The more icons a measure receives, the higher that measure scored in the category, just like a hotel or restaurant star rating.

[43] In some cases, a result that is valid for an individual measure is unrealistic when results of similar measures are aggregated. For example, aggregating estimates of GHG reductions from individual commute trip reduction measures can lead to unreasonable estimates of the drop in drive alone commute rates.
[44] For example, water conservation reduces GHG emissions from the water agency's operations, not the County government's operations. These reductions have been noted – as the County is interested in preventing climate change, regardless of the GHG source – but are not counted towards the emissions reduction target.
[45] The complete methodology and scoring system used to prioritize the measures is provided in Appendix D: Methodology Notes.
[46] These analyses were performed for the purpose of prioritizing the recommended GHG reduction measures, using order-of-magnitude estimates. A more detailed consideration of the costs and benefits of an action should be completed before implementation.

The categories and the icons used are:

GHG Reductions & Co-Benefits: A high rating in this category indicates a high GHG reduction potential as well as an assessment that the measure will provide several additional environmental, social, economic, or other benefits provide (e.g., improving air quality, saving employees money).

Resource Efficiency: A high rating in this category indicates that a measure requires a smaller investment of financial and staff resources, or that upfront investment results in significant annual savings. Implementation costs, potential savings, and the staff time required for implementation were considered. High cost savings combined with low staffing needs result in the highest ranking.

Practicality: A high rating in this category indicates that a measure builds on existing policies, plans, or programs, lays a foundation for the implementation of other measures in the Plan, and was deemed highly feasible by County staff.

An overall ranking based on each measure's assessment across the eight criteria was developed to assign a priority tier (first, second, third) to each measure. These tiers provide general guidance on the order in which the measures may be most effectively implemented and a sense of where the County should direct limited resources first. A measure's priority tier may be revised as circumstances change, such as if grant funds are secured for implementation of a particular type of project.

The measures are prioritized within each of the six action areas, rather than across all areas. This is because, if ranking was done across all areas, one action area may have a disproportionate number of first tier projects, and the agency with primary responsibility in that action area would have limited time and resources available to implement multiple measures. The benefit of prioritizing within each area is that all action areas will move forward simultaneously.

Ultimately all of the recommended emissions reduction measures – or measures that reduce at least the same amount of GHG's – must be implemented to meet the County's GHG reduction targets. A measure in the third tier is still effective; there is simply increased overall benefit from implementing higher tier measures first.

GUIDE TO THE ACTION AREA CHAPTERS OF THE CLIMATE ACTION PLAN

While the County's Commitments to Climate Protection provide high-level policy direction for reaching the GHG reduction target, the specific emissions reduction measures provide a detailed blueprint for how the County will fulfill those Commitments. This section discusses how those measures are organized and their associated GHG reductions are reported in Chapters 3 to 8.

Organizational Structure

The major levels of organization in the Plan (illustrated in Figure 6) are as follows:

Action Areas: The action areas are divided into six broad areas:

- Climate Protection Leadership;
- Cross-Cutting Strategies;
- Built Environment;
- Transportation;
- Solid Waste; and
- Beyond Reductions.

Strategies: The strategies group together several similar measures within an action area. For example, within the Built Environment action area, strategies include energy efficiency, green building practices, and alternative power generation.

Emissions Reduction Measures: The measures are the key functional elements of the Climate Action Plan. They outline the specific steps the County will take within each strategy to meet the overall GHG reduction target. The recommended measures include a mix of short and longer-term policies, programs, goals, and actions.

Supporting Actions: The supporting actions are more detailed steps to take in implementing the emissions reduction measures. Supporting actions are identified for some measures in circumstances where specific actions are higher profile, are a priority within the County, or have the potential for particularly high GHG reductions.

FIGURE 6: ORGANIZATIONAL ELEMENTS OF THE CLIMATE ACTION PLAN

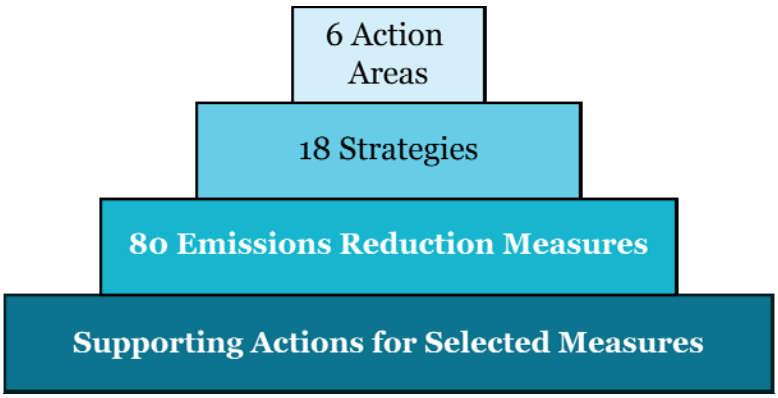
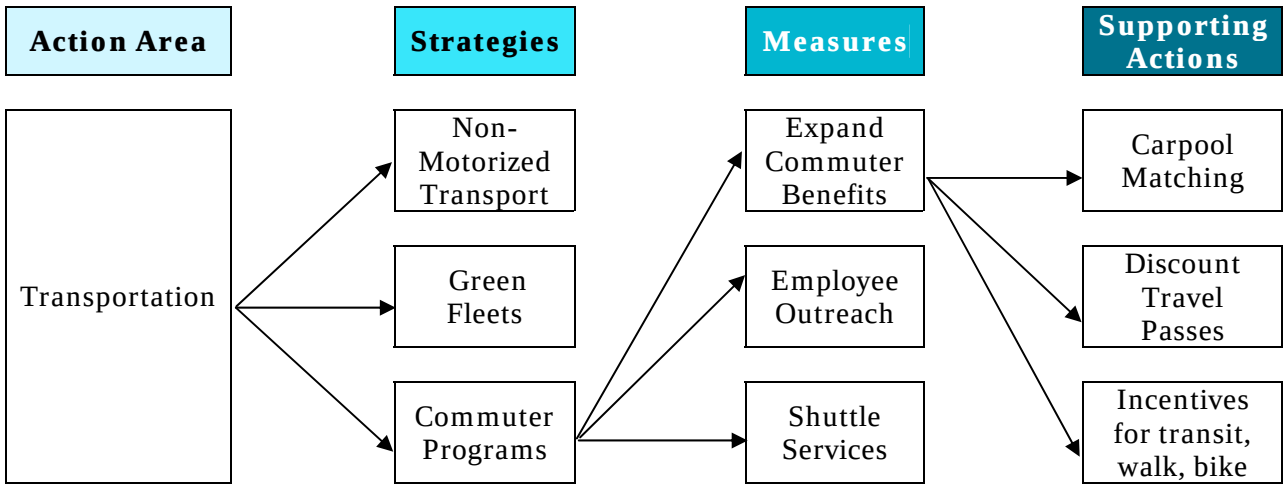


Figure 7 provides a simplified example of how each of the elements of the Plan work together to lay out the course the County will follow to meet its 2020 GHG reduction target. This example shows the three strategies in the Transportation action area, sample measures associated with the Commuter Programs strategy, and a few of the supporting actions for one of those measures. These measures all support Commitment 13, in which the County commits to working towards shifting an additional 20% of employee commute trips from single-occupancy vehicles to alternative travel modes. (This example is not complete, but rather is provided for illustrative purposes. A similar diagram could be drawn for each of the Commitments or action areas.)

FIGURE 7: EXAMPLE OF THE ELEMENTS IN THE CLIMATE ACTION PLAN



Reporting Potential Greenhouse Gas Reductions

Throughout the Plan, anticipated GHG reductions are reported at the strategy level for a number of reasons:

- Some reductions in the Plan could only be calculated at the strategy level because data were not available on the impact of individual measures;
- In some case, adjustments were made at the strategy level to avoid double counting the reductions from measures that affect similar emissions sources (e.g., providing shuttles and conducting outreach on commuter benefits both influence employees' commute patterns);
- Grouping reduction estimates allows for increased flexibility in implementation by emphasizing reductions needed from key strategies rather than requiring specific reductions from each measure; and
- Estimates at the strategy level provide a high level of confidence about the level of reductions expected from a related group of measures.

Some action areas end with a description of the major efforts at the state level that contribute to local GHG reductions. These are not actions that the County has local control over, but they are important for meeting the County's emissions reduction targets (e.g., a state requirement that all fuel sold meet a low-carbon standard will significantly reduce the County's fleet and commute-related emissions).

If these actions are not implemented by the State, the County should either take steps to implement them locally or take additional actions that achieve similar emissions reductions. However, these measures, like increasing the percentage of renewable energy required in the electricity supply, are best suited for implementation at a larger scale. Therefore, state-level actions are listed independently to both illustrate the impact they will have and highlight items that the County should be advocating for in Sacramento.[47]

Overview of the Action Area Chapters

The next six chapters each highlight one of the action areas in the Climate Action Plan. Each chapter provides additional details on the strategies and measures the County will employ to reduce its carbon footprint and meet its 2020 GHG reduction target. Figure 8 outlines the action areas and strategies discussed in the following chapters. (A complete listing of the Commitments to Climate Protection and of all the GHG reduction measures with their supporting actions is provided in Appendix E: Listing of the Commitments, Measures, and Supporting Actions.)

[47] These are measures included in the State's *AB32 Scoping Plan*. In light of current economic conditions and potential for future political changes, it will be important to ensure that those measures are in fact implemented.

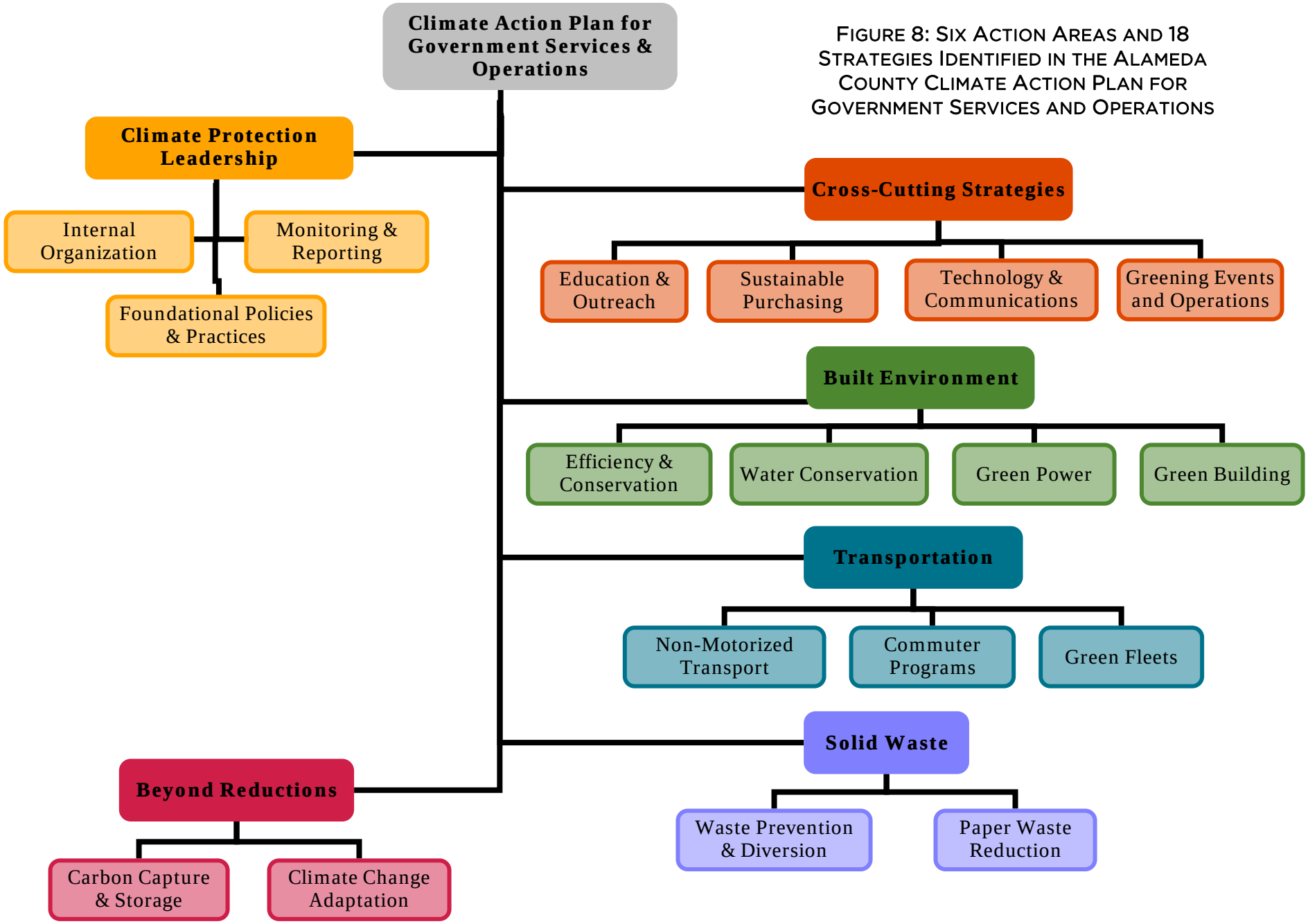


FIGURE 8: SIX ACTION AREAS AND 18 STRATEGIES IDENTIFIED IN THE ALAMEDA COUNTY CLIMATE ACTION PLAN FOR GOVERNMENT SERVICES AND OPERATIONS

CHAPTER 3: CLIMATE PROTECTION LEADERSHIP ACTION AREA

The Climate Protection Leadership action area contains strategies and measures that provide a critical foundation for meeting Alameda County's long-term greenhouse gas (GHG) reduction targets for operations and government services. These measures are high-level policies and actions that are broad in scope, address structural issues, or change organizational culture. They create fundamental shifts in how the County conducts business and delivers services; remove barriers to climate friendly activities; influence how agencies interact with each other and employees; and institutionalize climate protection.

The Climate Protection Leadership Action Area includes three strategies for achieving emissions reductions. The strategies include creating the **internal organization** to effectively implement emissions reduction measures, establishing procedures for **monitoring and reporting** progress and success, and taking steps to put in place **foundational policies and practices** to enable GHG emissions reductions. The measures outlined under these strategies set the stage for many of the emissions reductions achieved in other areas of the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan).

Alameda County Commitments to Climate Protection addressed in the Climate Protection Leadership action area:

1. Establish a directed cross-agency climate team to coordinate and guide the implementation of greenhouse gas reduction measures.
2. Develop performance-based sustainability indicators and provide the Alameda County Board of Supervisors with regular updates on progress towards meeting the County's climate protection goals.
3. Integrate full-cost financial analysis and greenhouse gas considerations into the County's capital planning and budget processes; decisions surrounding master planning and the location of government services; and operational policies, plans, and decisions.
4. Conduct a review of policies, programs, and procedures to remove barriers to climate protection efforts and ensure that employee participation in these efforts is convenient and efficient.

GHG Reductions: The Climate Protection Leadership measures will result in GHG reductions; however, these reductions are either difficult to quantify, relate to lifecycle emissions reductions that occur beyond the County's jurisdiction, or are accounted for in the other action areas in the Plan. Therefore, a specific emissions reduction number is not reported here.

Monitoring and Reporting: Recommended monitoring and reporting for this action area includes (but is not limited to) establishing a systematic approach to:

- Tracking the development, adoption, and implementation of the recommended policies and programs; and
- Implementing the measures in the Monitoring and Reporting strategy.

INTERNAL ORGANIZATION STRATEGY

Implementing the Climate Action Plan will require a coordinated effort in order to efficiently and effectively incorporate climate protection and sustainability into the operations of all agencies and actively engage County employees in emissions reduction efforts.

This strategy calls for the creation of a permanent Cross-Agency Climate Team representing all County agencies. This team will be tasked with overseeing implementation of the Plan, identifying opportunities to share resources and combine efforts between agencies, and exchanging best practices that could be replicated in other agencies. This team will be a continuation of the group of Agency Climate Coordinators assembled to help develop the Plan.

Implementation of the Climate Action Plan will also benefit from the identification of a point person charged with overall management of the Plan and providing support to the Cross-Agency Climate Team. This person will be tasked with facilitating program implementation, pursuing funding opportunities, and monitoring and reporting on progress.

Finally, County employees should be directly engaged in the process of implementing the Climate Action Plan. This will be facilitated through the development of agency- or department-level Green Teams (already established in at least three County agencies) that provide employees with a structure to identify opportunities and take action within their agencies. Engagement will also be promoted by formally integrating sustainability into job descriptions and management competencies.

Co-Benefits: Improved interagency communication; Employee engagement and accountability; Consistent policies and programs Countywide

GHG Reduction Measures – Internal Organization Strategy

This section describes the measures that make up the Climate Protection Leadership action area – Internal Organization strategy. Table 2 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[48]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 2 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

[48] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

TABLE 2: GHG REDUCTION MEASURES – INTERNAL ORGANIZATION STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CPL-1	Establish an ongoing cross-agency climate and sustainability team to guide the County's greenhouse gas reduction activities	1st			
CPL-2	Establish a cross-agency Climate Coordinator position to oversee implementation of the Climate Action Plan	2nd			
CPL-3	Promote the establishment of agency-level Green Teams	3rd			
CPL-4	Incorporate sustainability principles into job duties	3rd			

CPL-1 Establish an ongoing cross-agency climate and sustainability team to guide the County's greenhouse gas reduction activities

Background and Description: A team of Agency Climate Coordinators was established to assist in the development of the Plan and played a critical role in providing perspectives from the diverse agencies that make up the County. As implementation of the Plan moves forward, interagency communication and coordinating climate protection efforts will become even more important. This measure establishes the Cross-Agency Climate Team as an ongoing body that will assist in implementation and monitoring of the Plan. More information on the Cross-Agency Climate Team and the role it will play in implementing the Plan can be found in Chapter 9.

Priority Tier: First

Potential next step(s): Develop a meeting schedule and work plan for the Cross-Agency Climate Team based on input from the Agency Climate Coordinators.

CPL-2 Establish a cross-agency Climate Coordinator position to oversee implementation of the Climate Action Plan

Background and Description: This measure calls for the creation of a dedicated position to manage the process of implementing the Plan. Without staff dedicated to the management of the County's climate work, it will be very difficult to maintain ongoing implementation and monitor the Plan's progress. In its 2009 report *Lessons Learned: Creating a Climate Action Plan*, the City of Chicago identified dedicated staff as an essential component of successfully taking on a project with as broad a scope as a Climate Action Plan.[49]

Given the challenging budget the County is currently faced with, a new dedicated position may be unrealistic in the near term. Using existing staff to fill in the gaps may be a stopgap, but

[49] Parzen, Julia, "Lessons Learned: Creating the Chicago Climate Action Plan," July 2009, www.chicagoclimateaction.org (accessed April 7, 2010).

achieving the County's climate protection targets – and benefitting from the accompanying operational efficiencies – will require a serious commitment to staffing the effort.

Priority Tier: Second

CPL-3 Promote the establishment of agency-level Green Teams

Background and Description: A green team is most commonly a group of employees representing various levels of an organization (including management) that meets regularly to develop and carry out environmental projects within their organization, agency, or department. A few County agencies, such as General Services Agency and the Environmental Health Department (within the Health Care Services Agency), have established green teams. These teams can both carry out education campaigns and undertake projects to reduce GHG emissions. For example, the General Services Agency green team set up stations at the 2009 all-staff Town Hall meeting to help individuals calculate and understand their own carbon footprints and ran a series of lunchtime workshops on reducing personal carbon footprints. The Environmental Health green team selected, purchased, installed, and maintains an outdoor food waste composting system to divert food scraps from the landfill. Establishing a green team requires an investment of staff time, especially in the early stages of development, but once a team has momentum, it can take on projects that no single staff member would be able to do on their own.

Priority Tier: Second

CPL-4 Incorporate sustainability principles into job duties

a. Identify and assess management competencies (e.g., skills, abilities, knowledge) to promote sustainability initiatives
b. Review classifications and modify job descriptions to include sustainability duties, as appropriate

Background and Description: The term **"**management competencies" is used by human resource specialists to refer to the knowledge and abilities that a manager should possess in order to complete their job duties and effectively manage their team. Developing sustainability-related management competencies, as called for in this measure, will clarify the skills that County managers will need to have in order to effectively communicate and lead sustainability efforts. These include managing employees in remote work environments (to support telecommuting), managing supplies and resources to save money and reduce waste, and meeting sustainability-related performance indicators.

In addition, modifying job descriptions, where appropriate, to include sustainability duties (e.g., employees working with the County fleet could be asked to have a familiarity with low-emissions vehicles) illustrates the value that the County places on individual participation in achieving the County's sustainability goals. Taking such a step will also help the County attract and retain high-quality job candidates. In a 2008 poll of workplace attitudes, more than 75% of respondents said it was important to "have an employer that is going green in a significant way."[50]

Priority Tier: Third

[50] "Attitudes in the American Workplace" Poll, Conducted by Zogby International for The Marlin Company, 2008.

MONITORING AND REPORTING STRATEGY

Tracking and reporting on progress is necessary to ensure that the Climate Action Plan achieves the goals (e.g., GHG reductions, co-benefits) it was intended to accomplish and remains relevant as conditions in the County change. The measures contained here provide a procedure to ensure the Plan continues to address current realities. The specific objectives of the monitoring and reporting measures are to:

- Ensure that implementation of the Plan is moving forward on the correct path;
- Incorporate reporting into relevant County processes;
- Measure progress towards achieving the GHG reduction targets;
- Establish transparency in reporting progress on the Plan; and
- Document successes in order to facilitate replication.

Co-Benefits: Increased transparency and accountability; Improved data management for fuel, electricity, waste disposal expenditures

GHG Reduction Measures – Monitoring and Reporting Strategy

This section describes the measures that make up the Climate Protection Leadership action area – Monitoring and Reporting strategy. Table 3 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[51]

GHG Reductions & Co-Benefits: ; Resource Efficiency: ; Practicality:

A discussion of each measure in this strategy is included after Table 3 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 3: GHG REDUCTION MEASURES – MONITORING AND REPORTING STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CPL-5	Develop sustainability indicators and internal reporting mechanisms to track progress towards meeting the County's emissions reductions goals and inform the decision-making process	1st			
CPL-6	Address sustainability in each agency's annual budget process and business plans	2nd			
CPL-7	Conduct periodic re-inventories of the greenhouse gas emissions associated with County operations and service delivery	3rd			

[51] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

CPL-8	Produce a sustainability report card for the Board of Supervisors and the public that provides an update on County progress towards meeting its climate protection and sustainability goals	3rd			
CPL-9	Develop a County operations database of sustainability initiatives that agencies regularly update with their green practices	3rd			

CPL-5 Develop sustainability indicators and internal reporting mechanisms to track progress towards meeting the County's emissions reductions goals and inform the decision-making process

a. Develop performance metrics that each agency reports on annually
b. Provide agencies and building occupants with regular reports on energy and resource use
c. Provide sustainability indicator updates to employees in an accessible format (e.g., online)

Background and Description: This measure calls for the County to develop indicators and a reporting tool that will provide a comprehensive system for measuring and reporting on the County's progress towards achieving the GHG reduction targets outlined in the Plan. The reporting system will need to be rigorous enough to provide useful feedback on whether the measures are being implemented and emissions reductions are being achieved, but also flexible enough that the time spent reporting does not outweigh the benefit of that reporting. The system developed for tracking implementation of the Climate Action Plan will also address the strategy in the Environment/Sustainability section of the County's Strategic Vision to "Develop and implement Countywide environmental performance indicators and produce an annual sustainability report for the public." This annual report will be made available to the public through the County's sustainability web site: www.acsustain.org.

Priority Tier: First

Potential next step(s): Review the sustainability monitoring, tools, and practices being used by others (e.g., local governments, companies) and the monitoring and reporting sections of other climate action plans. Decide on the approach that will be used by the County and begin developing a system.

CPL-6 Address sustainability in each agency's annual budget process and business plans

Background and Description: This measure is intended to accelerate implementation of the Climate Action Plan by incorporating it into existing County agencies processes and plans. During the annual budgeting process, County agencies report on their accomplishments for the past year and outline their goals for the next year. This measure calls for agencies to incorporate climate protection and other sustainability efforts into this annual process. This measure further calls for incorporating climate- and sustainability-related efforts into agencies' business plans, which play an important role in guiding the agencies' work plans.

This measure also addresses the strategy in the Environment/Sustainability section of the County's Strategic Vision to review and revise budgeting processes "to reflect the County's commitment to environmental stewardship."

Priority Tier: Second

CPL-7 Conduct periodic re-inventories of the greenhouse gas emissions associated with County operations and service delivery

Background and Description: The 2003 greenhouse gas emissions inventory established the County's baseline emissions level and provided a forecast of where the County's emissions levels are headed if no actions to reduce those emissions are taken. Periodically conducting a full re-inventory of GHG emissions will determine how emissions have changed over time and provide a comprehensive picture of progress made towards meeting the County's GHG reduction targets.

Completing a GHG inventory can be time consuming, but it is important to at least periodically (approximately every three years) look at the full range of emissions from all sources related to the County government's operations and services. This re-inventory will provide early warning if emissions reduction efforts are being offset by increases in emissions in other parts of the County's operations and give the County time to make appropriate adjustments to the Climate Action Plan. Conducting a re-inventory also provides an opportunity to revisit the methodologies and data sources used in the original inventory and make any necessary improvements to increase the accuracy and completeness of the County's GHG inventory procedures.

Priority Tier: Third

CPL-8 Produce a sustainability report card for the Board of Supervisors and the public that provides an update on County progress towards meeting its climate protection and sustainability goals

Background and Description: Requiring reporting to both the Board of Supervisors and the Public will help ensure that regular and straightforward assessment of the Plan's progress occurs and that the Plan stays dynamic and relevant. Regular reports will also publicize successes and provide a model for others. This measure is closely linked to measure CPL-5, which calls for the development of Sustainability Indicators to track Plan progress.

Priority Tier: Third

CPL-9 Develop a County operations database of sustainability initiatives that agencies regularly update with their green practices

Background and Description: In order to ensure that best practices are shared among agencies, it is important to document those efforts and make that information accessible to other agencies and departments. Having a central repository for green practices also provides an opportunity for agencies to showcase their environmental leadership and inspire others to follow suit. Best practices can also be used by the County to showcase successes in grant applications and apply for awards.

The task of updating this database should be integrated into the process being used to collect data for the annual report (CPL-8) and should require minimal effort. Ideally, updating the database would be an online process with standard forms that agencies can complete independently.

Priority Tier: Third

FOUNDATIONAL POLICIES AND PRACTICES STRATEGY

The Foundational Policies and Practices measures are intended to put in place policies that will facilitate easier implementation of the Climate Action Plan in the near term and put the County on track for realizing greater emissions reductions after 2020. These measures play a fundamental role in putting the County on the path towards meeting the target of 80% emissions reduction by 2050. The measures included within this strategy cover a range of topics. The individual measures' descriptions below provide additional information.

Co-benefits: Fiscal and social responsibility; Lifecycle GHG emissions reductions; Increased voice at the state and federal level; Streamlined operations; Improved service delivery

GHG Reduction Measures – Foundational Policies and Practices Strategy

This section describes the measures that make up the Climate Protection Leadership action area – Foundational Policies and Practices strategy. Table 4 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[52]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 4 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

[52] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

Table 4: GHG Reduction Measures – Foundational Policies and Practices Strategy

#	Measure Name	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CPL-10	Develop financial analyses that capture the full costs and benefits of decisions and practices, including lifecycle costs and environmental benefits	1st			
CPL-11	Establish funding mechanisms to implement climate protection projects that improve operational or resource efficiencies, generate greenhouse gas reductions, or lead to long-term cost savings	1st			
CPL-12	Consider greenhouse gas emissions and climate change impacts when evaluating capital projects	1st			
CPL-13	Develop a legislative platform to influence state and federal climate protection discussions	2nd			
CPL-14	Evaluate opportunities to reduce greenhouse gas emissions from sources over which the County has influence but not direct control (e.g., purchasing goods and services, investing)	2nd			
CPL-15	Establish mechanisms to identify and address County polices, programs, and procedures that create barriers to emissions reduction	2nd			
CPL-16	Foster local and regional partnerships to maximize the impacts of the County's emissions reduction efforts	3rd			

CPL-10 Develop financial analyses that capture the full costs and benefits of decisions and practices, including lifecycle costs and environmental benefits

Background and Description: This measure calls for the County to take a more comprehensive or full-cost approach to analyzing proposed purchases, projects, and policy decisions that require a capital outlay. Full-cost analysis will encompass not just upfront costs but also the longer-term financial implications, including operating costs as well as environmental benefits.

The County is already moving in this direction in such areas as vehicle purchases. If the County were to look exclusively at purchase price as the deciding factor, hybrid vehicles would not be able to compete with standard internal combustion engine vehicles. When the vehicle's lower fuel and maintenance costs are factored into the equation, however, the hybrid becomes a competitive choice.

In addition to taking a more complete view of financial costs, this measure also calls for decision-making to be informed by the relative environmental benefits of County choices. This means that in the case of hybrid vehicles, the fact that hybrids result in GHG and air pollutant reductions would also be considered as a factor in the decision-making process.

In order to fully implement this measure, the County will need to develop the appropriate structure to facilitate this type of analysis. A review of materials developed for the "triple bottom line" approach used by other jurisdictions can provide a starting point for the County's work in this area. This approach provides a method for assessing economic, environmental, and social implications of decisions.

Priority Tier: First

Potential next step(s): Contact organizations and jurisdictions, such as the City of San Diego, that have incorporated a "triple bottom line" approach into decision making processes to determine the County's approach.

CPL-11 Establish funding mechanisms to implement climate protection projects that improve operational or resource efficiencies, generate greenhouse gas reductions, or lead to long-term cost savings

Background and Description: Although many of the measures identified in the Climate Action Plan build on existing work that the County is doing, it will be necessary to identify additional funding in order to fully implement the Plan. The County has been successful in the past at receiving grant funding for sustainability initiatives, and many of the Climate Action Plan measures will also provide good return on investment. The County has also been able to secure low-interest loans for certain projects, such as loans from the California Energy Commission for solar power installations.

This measure calls on the Climate Executive Team, or similar body, to develop a long-term funding strategy for implementing emissions reduction projects. A stable funding mechanism would greatly increase the ability of the County to implement the Climate Action Plan. This could include such innovative funding mechanisms as developing a revolving energy fund, leveraging the cost savings associated with many of the measures to fund new projects, and building on the County's ability to get grant funding.[53]

Priority Tier: First

Potential next step(s): Begin discussions at the Climate Executive Team meetings of how to design and implement of an appropriate funding mechanism.

[53] More information on Revolving Energy Funds is available in ICLEI – Local Governments for Sustainability's "ICLEI Resource Guide: Revolving Energy Fund," Winter 2008.

CPL-12 Consider greenhouse gas emissions and climate change impacts when evaluating capital projects

Background and Description: This measure reiterates the Strategic Vision's call for the capital planning process to "reflect the County's commitment to environmental stewardship." Potential capital projects will need to be assessed to determine their anticipated GHG emissions and what lower emissions options may be available. Emissions associated with new facilities' energy and water use, potential vehicle trips to the new site, and the construction process should be considered as part of the capital planning process.

In addition to including the GHG emissions, this measure also calls for capital projects to be evaluated based on their vulnerability to the impacts of climate change, such as sea-level rise, flooding, or wildfires. These assessments will become easier once the County conducts an analysis of its vulnerabilities to climate change and the potential risks are more clearly defined. See the Climate Change Adaptation strategy in the Beyond Reductions action area of the Plan (in Chapter 8) for more information.

Priority Tier: First

Potential next step(s): Review the County's Capital Improvement Plan request form and other related documents and develop appropriate climate change related questions or information requests to incorporate into the process.

CPL-13 Develop a legislative platform to influence state and federal climate protection discussions

Background and Description: Efforts made at the state level to reduce GHG emissions will make it easier for the County to achieve its climate protection goals. The Plan identifies several particularly important regulations that the County should track and advocate for at the state level. These include the 33% Renewables Portfolio Standard (see the State-Level Advocacy section in Chapter 5: Built Environment Action Area) and the Low Carbon Fuel Standard (see the State-Level Advocacy section in Chapter 6: Transportation Action Area). It will be important to remain attentive to state and federal developments in climate policy, especially as the current budget crisis in California has already prompted calls from some groups to roll back key climate legislation.

Priority Tier: Second

CPL-14 Evaluate opportunities to reduce greenhouse gas emissions from sources over which the County has influence but not direct control (e.g., purchasing goods and services, investing)

a. Consider lifecycle emissions in greenhouse gas analyses
b. Assess the greenhouse gas impacts resulting from public access to County services when making decisions on how services are delivered (e.g., paper use, vehicle trips)
c. Review the County's investment strategies to identify opportunities to invest with companies that reflect the County's commitment to climate protection and sustainability

Background and Description: The standard measurement tools used by local governments to determine their GHG emissions levels are designed to show emissions that occur within an organizational or jurisdictional boundary (i.e., occurring within its facilities and fleets, or as a direct result of its actions like sending waste to a landfill or consuming electricity). There are, however, additional GHG emissions associated with County activities that are harder to accurately quantify, but which the County can still take action to reduce.

As a customer, the County purchases millions of dollars worth of goods each year, which have a carbon footprint related to their manufacturing, transport, and disposal that is not fully accounted for in the County's emissions inventory. Measurement of these upstream and downstream emissions is highly complex, and collecting accurate data is fraught with challenges. For example, information about manufacturing processes can be proprietary and not publicly available. Several lifecycle carbon calculators are available, however, that provide enough detail on the relative carbon footprint of different goods to inform the decision-making process. In addition, new tools are being developed all the time.

There are also GHG emissions associated with the public's access to County services that were not incorporated into the County's GHG emissions inventory. For example, members of the public produce GHG emissions when traveling to County facilities to access County services. This emissions sources could be reduced with careful planning of where new facilities are located and by using the Internet to deliver more services to the public.

Finally, as an investor the County has an opportunity to steer significant funds towards investments in businesses and industries that have lower carbon footprints, such as through the employee retirement fund.

Priority Tier: Second

CPL-15 Establish mechanisms to identify and address County polices, programs, and procedures that create barriers to emissions reduction

Background and Description: Sometimes the implementation of changes that seem relatively straightforward can be impeded by unplanned barriers embedded in current practices. For example, these barriers may include procedures requiring multiple copies of forms when electronic submittal could be used, subsidies for parking that encourage car commutes, or restrictive dress codes that hamper efforts to reduce energy use from air conditioning systems on hot days.

This measure calls for a systematic look at the processes and procedures in place in the County to identify and deal with barriers to emissions reductions. Taking a proactive approach is a key component of this measure, but as implementation of the Climate Action Plan moves forward, agencies will need to continue to work cooperatively to identify and overcome barriers as they arise.

Priority Tier: Second

CPL-16 Foster local and regional partnerships to maximize the impacts of the County's emissions reduction efforts

Background and Description: The County has a history of building strong partnerships with other local governments and organizations on environmental issues. In fact, the climate work that is currently underway at the County was launched in partnership with all 14 city governments within Alameda County and with StopWaste.Org, a public agency that provides environmentally sound waste management programs for residents, businesses, and institutions of Alameda County.

Developing partnerships provides an opportunity to leverage limited resources and achieve cost savings, such as through cooperative purchasing agreements or collaborations on grant applications with other local governments. Partnerships also provide an opportunity to learn from others and expand the impact of County's actions by providing models that others can replicate. For example, the County is currently playing a leadership role in a regional electric vehicle partnership. Electric vehicles are a technology whose potential increases the more the region cooperates in installing infrastructure and building market demand.

Priority Tier: Third

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CHAPTER 4: CROSS-CUTTING STRATEGIES ACTION AREA

The Cross-Cutting Strategies action area contains strategies and measures that have an effect on more than one source of greenhouse gas (GHG) emissions (e.g., vehicle use, waste decomposition, or energy use in buildings). For instance, a purchasing policy that specifies products that are easier to recycle and are more energy-efficient will reduce GHG emissions associated with both the solid waste and built environment action areas. As their impacts span multiple sources of GHG emissions, these measures are grouped together in one action area rather than being repeated multiple times throughout the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan).

The Cross-Cutting Strategies action area includes four strategies for achieving emissions reductions. These strategies include providing **education and outreach** to County employees, developing **sustainable purchasing** policies to guide the County's procurement decisions, incorporating advanced **technological innovations and communications** into County services and operations, and **greening events and operations** for which the County is responsible.

Alameda County Commitments to Climate Protection addressed in the Cross-Cutting Strategies action area:

5. Develop a Countywide employee education and communications strategy on climate change and incorporate climate protection into the County's public education and outreach programs.
6. Establish a comprehensive integrated purchasing policy that considers the environmental impacts of the manufacturing, use, transport, and disposal of products.
7. Advance an accessible, technologically innovative, government service model that features green IT, electronic record keeping and service delivery, and virtual meeting and workspace technologies.

GHG Reductions: The Cross-Cutting Strategies measures facilitate GHG reductions in other action areas and support many of the specific measures contained in the Built Environment, Transportation, and Solid Waste action areas; therefore, the GHG reduction impacts of these measures have been captured in those action areas and are not reported here.

Monitoring and Reporting: Recommended monitoring and reporting includes (but is not limited to) establishing a systematic approach to:

- Tracking the number of employees contacted through educational and outreach campaigns and the outcomes of that contact;
- Developing an approach for annual reporting on the purchase of selected commodities; and
- Reporting on and sharing best practices annually.

EDUCATION AND OUTREACH STRATEGY

The broad participation of all County employees is necessary to meet the far-reaching greenhouse gas reduction targets set forth in the Plan. With approximately 9,000 employees, the County's employee population is equal to the resident population of many small towns. As is true in all communities, creating the system-wide changes needed to realize significant

reductions in GHG emissions requires community support: in this case, successful change will require an employee population that is willing and able to make changes in the way they do things during their normal workday. Therefore, education and outreach will be a vital component of implementing the measures in all other action areas in the Plan.

Examples of emissions reduction strategies that require individual choices include reduction of emissions from employee travel to work and meetings, energy conservation measures, and waste prevention measures. The potential emissions reductions from these programs rely on employees making choices about actions such as how they commute to work or travel to a meeting; whether to turn off personal and office equipment when not in use; or if they will separate recyclable materials from their garbage.

Employee outreach conducted in conjunction with developing the Plan suggests that many County employees are interested in supporting climate protection efforts. Cumulatively, the impacts of employees taking small individual actions add up to significant GHG reductions. Research indicates, however, that a general interest in supporting climate protection efforts may not translate directly to employees taking a specific climate protection action. Research has also found that, in most cases, simply providing people with information on what to do differently is often not enough. When people are considering taking a new action, a number of barriers might prevent them from taking the new action (e.g., it's viewed as inconvenient, they simply forget). At the same time, they might expect to get benefits from a new action (e.g., improved health).

As part of its outreach efforts, the County will want to look closely at these barriers and benefits and pair outreach and education with tools, resources, and – when necessary – policy changes that overcome barriers. For example, an employee might consider carpooling but be held back by not knowing how to arrange a carpool or not wanting to carpool with a stranger. Carpooling promotion – combined with a ride-matching service that connects employees with other employees and paired with incentives in the form of discounted, reserved carpool parking – would address these barriers.

The measures within this strategy are focused on building employee participation in the County's climate protection efforts by creating an education and outreach program, informed by current research, which is successful in encouraging County employees to take individual action. This strategy also calls for agencies to leverage existing County educational and outreach channels to promote sustainable behavior by the public (e.g., library programs, volunteer tree planning programs).

Co-benefits: Engages employees; Promotes GHG reduction opportunities to the community; Builds in-house capacity to implement environmental measures

GHG Reduction Measures – Education and Outreach Strategy

This section describes the measures that make up the Cross-Cutting Strategies action area – Education and Outreach strategy. Table 5 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[54]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

[54] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

A discussion of each measure in this strategy is included after Table 5 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 5: GHG REDUCTION MEASURES – EDUCATION AND OUTREACH STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CC-1	Develop a Countywide employee education and communications strategy on climate change and sustainability to support emissions reduction actions	1st			
CC-2	Incorporate climate protection and sustainability into the County's existing community education and outreach programs (e.g., adult and youth leadership academies, library programs)	2nd			

CC-1 Develop a Countywide employee education and communications strategy on climate change and sustainability to support emissions reduction actions

a. Survey employees on their level of knowledge, suggestions for current programs, and needs
b. Integrate sustainability into new employee orientations and trainings
c. Expand the sustainability Intranet site to create a one-stop-shop for employee green resources
d. Develop mechanisms for establishing an ongoing dialogue with County employees on sustainability and greenhouse gas emissions reduction
e. Establish a climate protection innovator awards program

Background and Description: The goal of this measure is to engage and empower employees to make changes that result in the reduction of GHG emissions. The supporting actions described above provide a set of tools for the County to use to connect with employees.

In designing its outreach and education strategy, however, the County will draw on proven approaches to influence behavior change. Research has shown that it is typically not enough to provide information on what new actions to take and why. Instead, it is important to conduct specific research to determine the reasons why people engage in a certain behavior (the benefits they perceive) or the reasons why they might find it difficult to adopt that same behavior (the barriers). With a clear understanding of these barriers and benefits, it is possible to design a program that will motivate employees to take climate protection actions. Testing this program out in a small-scale pilot is a key step before rolling it out Countywide. It is also important to effectively evaluate how successful the program is at actually changing employees' behaviors.

Specific strategies for motivating and evaluating behavior change vary based on the specific actions and the barriers to, and benefits of, those actions. For example, if research shows that the main reason people do not turn out lights is that they forget, an energy-efficiency program might successfully put signs directly on light switches to remind people to turn off the light. This type of prompt has been shown to be effective at encouraging climate protection actions when

the main barrier is forgetting. If people are not reducing their paper use because the social context does not encourage it, an outreach effort aimed at paper waste reduction could involve asking employees to sign a large poster pledging to reduce their paper use. Public commitments have been shown to be effective at encouraging sustainable actions in these situations. Commitments and prompts are only two of a number of tools and strategies that have shown to be successful at encouraging sustainable behaviors. Approaches such as these will be considered when developing outreach and education strategies for the climate plan.

Among the research the County will draw on is the work of Doug McKenzie-Mohr, whose seminal book, *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing:*

- Discusses the need for programs based on research about what actually motivates behaviors;
- Outlines an approach for designing such a program; and
- Describes specific strategies, such as norms and prompts, proven to be effective at changing behavior.[55]

The education and outreach efforts in this measure lay an important foundation for the measures throughout the Plan that require the broad participation of County employees.

Priority Tier: First

Potential next step(s): Develop an employee survey that will reveal what barriers currently exist to taking desired emissions reducing actions.

CC-2 Incorporate climate protection and sustainability into the County's existing community education and outreach programs (e.g., adult and youth leadership academies, library programs)

Background and Description: Every year, County agencies participate in and sponsor scores of events, such as the annual adult and youth leadership academies, the Solano Stroll, and smaller gatherings held at libraries and other public venues. This measure calls for agencies to incorporate climate protection and sustainability messaging into these events when appropriate.

The County Library has already begun incorporating environmental content into their ongoing library programming, and the youth and adult leadership academies have regularly featured the County's Sustainability Program. Existing public events provide an opportunity for the County to demonstrate its leadership on climate protection and motivate residents to follow suit.

Priority Tier: Second

[55] McKenzie-Mohr, Doug, and William Smith. *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*. New Society Publishers. 2008. Also available at www.cbsm.com/public/images/FosteringSustainableBehavior.pdf.

SUSTAINABLE PURCHASING STRATEGY

A sustainable purchasing policy enables large and diverse organizations to specify the attributes desired in the products they purchase. These include criteria such as:

- Amount of recycled content used in manufacturing production (e.g., in paper, furniture);
- Minimum energy-efficiency requirements for electric equipment (e.g., Energy Star or EPEAT certified computers);
- Avoidance of the use of toxic chemicals (e.g., green cleaning supplies);
- Minimal packaging specifications to reduce waste generation (e.g., reusable packing materials, bulk deliveries); and
- Reduction in transportation necessary to deliver products (e.g., bulk instead of individual ordering, purchasing locally produced items).

Through integrating these types of specifications in purchasing contracts and bids, the County will contribute to GHG emissions reductions achieved in each of the other action areas. Additionally, adoption of a sustainable purchasing policy in a large organization like the County, which annually purchases millions of dollars worth of goods and services, is also a means to manage costs by increasing opportunities for bulk purchasing of environmentally preferable goods.

Sustainable purchasing policies seek to minimize emissions from a product's entire life, not just the emissions that occur at County facilities. This includes emissions associated with design, manufacture and shipping, as well as after the end of a product's useful life, when it enters the waste stream.[56] However, the range of GHG emissions associated with a product's entire lifecycle can be difficult to measure because they involve many emissions sources that are not clear to the user of the product, such as the details of resource extraction and manufacturing related emissions.

That being said, a number of quantitative tools have been developed to measure lifecycle GHG emissions of specific products.[57] These indicate that green or sustainable purchasing efforts can significantly reduce a local government's environmental impact. For example, the Green Cities California Coalition estimates that because their 10 member cities have shifted to purchasing 100% recycled content paper, they save 23 million gallons of water and 80,000 trees a year.[58]

Alameda County has already started taking steps in this area. Annually, the County purchases more than $20 million in goods with environmental specifications, such as paper products, furniture, and cleaning supplies. This strategy calls for the County to build on these efforts by adopting a comprehensive sustainable purchasing policy that applies broadly to purchases made directly by the County, as well as by agents acting on behalf of the County. Sustainable purchasing will also add to the effectiveness of the solid waste and energy-efficiency measures included in the Plan.

Co-benefits: Natural resource and energy conservation; Waste reduction; Toxics reductions

[56] See the detailed description of Climate Protection Leadership measure 14 for more on this topic.
[57] For example, the EPA's Recycled Content (RECON) Calculator estimates the lifecycle energy and GHG emissions impacts of purchasing items containing varying amounts of recycled material, available at www.epa.gov/climatechange/wycd/waste/calculators/ReCon_home.html.
[58] Green Cities California. "Sharing Best Practices for Sustainable Policy," www.greencitiescalifornia.org (accessed April 7, 2010).

GHG Reduction Measures – Sustainable Purchasing Strategy

This section describes the measures that make up the Cross-Cutting Strategies action area – Sustainable Purchasing strategy. Table 6 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[59]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 6 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 6: GHG REDUCTION MEASURES – SUSTAINABLE PURCHASING STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CC-3	Establish and implement an integrated purchasing policy that considers the environmental impacts of the manufacture, transport, use, and disposal of products	1st			

CC-3 Establish and implement an integrated purchasing policy that considers the environmental impacts of the manufacture, transport, use, and disposal of products

a. Develop product specifications that promote the purchase of resource- and energy-efficient items
b. Investigate the feasibility of using lifecycle cost assessments in purchasing decisions
c. Consider establishing a price preference for environmental criteria for procurement of goods and services
d. Ensure that contractors and vendors apply the County's green purchasing standards to products and services purchased, manufactured, or built in fulfillment of County contracts
e. Ensure new equipment is set up with the highest appropriate resource- and energy-efficiency settings
f. Work with vendors to minimize the packaging associated with County purchases
g. Arrange for vendors and producers to take back and properly dispose of products at the end of their useful life

Background and Description: This measure will require the County to officially adopt a policy that sets standards for environmental attributes of purchases and contracted services and to work with vendors to further reduce the lifecycle carbon footprint of County operations where possible. The policy should also encourage County agencies purchasing goods to rethink processes to determine whether purchasing an item is the best option (e.g., consider leasing or buying services rather than buying products, consider refurbishing existing goods).

[59] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

In addition to reductions in GHG emissions, green purchasing policies have many environmental benefits, including creating healthier workspaces (e.g., through the purchase of green cleaning products) and promoting resource conservation. For example, a Countywide purchasing policy that requires switching from the use of 30% recycled content paper to 100% recycled content paper would result in the following environmental benefits annually:[60]

- 6,390 trees saved;
- 177,661 lbs of trash not produced; and
- 1,574 lbs of air pollutants reduced.

An important component for ensuring that a green purchasing program has the desired effect will be to work with vendors to ensure that they understand the policies and are able to comply with them. Incentives, such as giving a price preference to vendors that have significantly greened their own operations, or who provide products that exceed environmental standards, should also be considered. These types of incentives are effective tools in motivating vendors to make a greater effort to stock green products and reduce their own carbon footprint.

Priority Tier: First

Potential next step(s): Form a working group to develop a sustainable purchasing policy for Board of Supervisors' adoption.

TECHNOLOGICAL INNOVATION AND COMMUNICATIONS STRATEGY

The rapid increase in the use of computers and the Internet in the last two decades have established the technology sector as a major consumer of electricity in the workplace. In response, the County encourages information technology (IT) managers to reduce the environmental impact of computer use by purchasing the most efficient equipment available. Several agencies have also started using specialized software that allows them to centrally influence the power use of individual computers (e.g., setting them to hibernate when not used for 20 minutes and to turn off at the end of the day).

Technological innovations also enable the County to do more with fewer resources while enhancing service delivery. Transitioning from paper-based processes to online systems both reduces paper consumption and the vehicle trips residents make to obtain County services. Using laptops instead of desktop computers makes telecommuting easier and reduces energy consumption (laptops are significantly more energy-efficient than desktop computers). Additionally, these types of remote computing applications create a workforce that is more resilient in the face of interruptions to service (like natural disasters) as they can work from a variety of remote locations. Finally, virtual meetings (teleconferences and web-conferences) reduce transportation emissions and save valuable staff time that would otherwise be spent traveling to and from meeting sites.

[60] Environmental impact estimates were made using the Environmental Defense Fund Paper Calculator. More information available at www.papercalculator.org.

This strategy calls for the County to adopt technological solutions that will enable emissions reductions while ensuring that the County is investing in the most efficient and environmentally preferable technology available. The measures in this strategy will reduce emissions associated with the Built Environment, Transportation, and Solid Waste action areas.

Co-benefits: Disaster preparedness; Improved service delivery; Enhanced communications, Energy and cost savings

GHG Reduction Measures – Technological Innovation and Communications Strategy

This section describes the measures that make up the Cross-Cutting Strategies action area – Technological Innovation and Communications strategy. Table 7 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[61]

GHG Reductions & Co-Benefits: ; Resource Efficiency: ; Practicality:

A discussion of each measure in this strategy is included after Table 7 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 7: GHG REDUCTION MEASURES – TECHNOLOGICAL INNOVATION AND COMMUNICATIONS STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CC-4	Standardize green IT efforts across agencies Countywide	1st			
CC-5	Expand efforts to transition to electronic record keeping and service delivery	2nd			
CC-6	Transition to technologies that facilitate flexible work arrangements	2nd			
CC-7	Promote, and provide training on, virtual meeting technologies	3rd			

[61] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

CC-4 Standardize green IT efforts across agencies Countywide

a. Expand cross-agency communication on green IT opportunities and advancements
b. Standardize purchasing specifications for computers
c. Develop purchasing standards for electronic equipment (e.g., computer peripherals, printers, copiers, fax machines)
d. Establish default settings for all new and existing computers and electronic equipment to maximize efficiency and resource conservation (e.g., power management settings)
e. Institute the use of centralized power management software in all agencies

Background and Description: On average, office equipment accounts for about 20% of the electricity consumed by office buildings,[62] with electricity use by computers and monitors accounting for well over half of that electricity use.[63] Furthermore, much of the County's work and some of the key strategies in the Plan are dependent on the use of computers and their peripherals (e.g., monitors, printers, speaker systems). It is likely that, in the future, more processes will be delivered online to reduce paper waste and increase convenience. It is also likely that more work and meetings will be conducted remotely to reduce vehicle travel. These trends will increase, rather than reduce, reliance on computers and other equipment.

There is much that can be done, however, to ensure that the County's computer inventory is as efficient as possible. This should include specifying the purchase of the most efficient equipment and enabling the optimal power management settings on those machines. In practice, most agencies in the County are currently purchasing machines that adhere to some environmental standard (e.g., Energy Star, EPEAT, 80 PLUS); however, no Countywide standard has been established. Such a standard would not only ensure that new computer purchases meet the highest environmental criteria but also result in cost savings if it enabled bulk purchasing of equipment across agencies.

Priority Tier: First

Potential next step(s): Convene a working group with representatives from Information Technology Division and agency managers to begin developing a more standardized approach to providing IT.

[62] Percentage is an average for all office buildings in PG&E Climate Zone 5. From the "California Commercial End Use Survey," funded by the California Energy Commission and completed by Itron and available at capabilities.itron.com/CeusWeb/.
[63] Moorefield, Laura, Brooke Frazer, and Paul Bendt, "Office Plug Load Field Monitoring Report." Ecos Consulting, December 2008.

CC-5 Expand efforts to transition to electronic record keeping and service delivery

a. Invest in digital document management software and equipment for Countywide use
b. Launch a comprehensive standardized records digitization effort
c. Coordinate digitization efforts with non-County agencies that make use of County records, filings, and reports
d. Conduct an agency-by-agency assessment of opportunities to offer web-based services, and provide online services where appropriate

Background and Description: In 2005, the Social Services Agency undertook a digitization effort, scanning paper case files and saving them as electronic documents. The effort allowed Social Services to reduce storage space for records from 100,000 square feet to 25,000 square feet. The Agency now saves money on annual warehouse rental and has reduced the need to make printed copies of materials. Other County agencies have worked to encourage easy online access to their services which minimizes the travel – and emissions – associated with the public's use of County services. For example, the Assessor's office has made improvements to its website like providing popular forms online.

This measure calls for agencies to work cooperatively on these efforts in order to achieve greater results at a lower cost. For example, it may not be possible for smaller agencies to take action if they have to purchase expensive equipment on their own. A coordinated approach to electronic recording keeping will increase the potential for cost management by allowing for the sharing of the equipment necessary to carry out these projects.

Priority Tier: Second

CC-6 Transition to technologies that facilitate flexible work arrangements

a. Make remote network access (e.g., laptops and network tokens, virtual desktop) standard for employees whose job duties require computer access
b. Investigate network virtualization
c. Implement virtual workspace technology (e.g., VOIP, soft-phones) as practicable

Background and Description: In order to achieve the GHG reduction benefits associated with flexible work arrangements (see Chapter 6: Transportation Action Area for more on this), the County workforce will need the ability to function smoothly from remote locations. To achieve this, it will be necessary to invest in technologies that enable seamless remote access to the electronic data and tools that County employees use to do their jobs.

Taking steps such as switching from desktops to laptops would also result in energy-related cost savings since laptops are typically 50% to 80% more efficient than desktops. Other technologies that will aid the transition to more flexible work arrangements include voice over Internet protocol (VOIP) and soft-phones, which both allow for telephone calls to be made over the internet, and "cloud computing," which allows users to access needed software, data, and programs via the Internet without having to install expensive software on individual computers.

The City of Los Angeles recently made a transition to "cloud computing" when their City Council approved moving all 30,000 city employees to an online email system provided by Google.[64] In

[64] Sarno, David. "Los Angeles adopts Google e-mail system for 30,000 city employees," *LA Times*, October 27, 2009, Technology section.

addition to the environmental benefits, having a workforce that is able to operate remotely increases the ability of the County to continue functioning during disruptions such as weather-related events, earthquakes, major highway construction, or transit strikes.

GHG reductions associated with this measure are incorporated into the Transportation action area's commuter strategies section.

Priority Tier: Second

CC-7 Promote, and provide training on, virtual meeting technologies

a. Modernize, utilize, and share video- and web-conferencing capabilities across agencies
b. Provide all agencies with access to teleconferencing equipment either in-house or shared between agencies
c. Actively promote the use of tele-, video- and web-conferencing to reduce trips

Background and Description: Although no studies have been done on the number and types of meetings that County employees attend, anecdotal evidence indicates that meeting attendance (both internal meetings and with other entities) takes up a significant amount of County staff time. While some in-person meetings are needed, it may be possible to reduce the GHG emissions associated with travel to meetings by increasing utilization of virtual meeting technology such as teleconferencing and video- and web-conferencing. Increasing the use of these technologies will also result in time savings and increased productivity.

Priority Tier: Third

GREENING EVENTS AND OPERATIONS STRATEGY

Greening is a term that has come to mean transforming something into a more environmentally friendly version of itself. This strategy deals specifically with efforts to improve the environmental footprint of County events and meetings, and more generally with greening operations through promoting agency participation in the Green Business program.

Because of their transitory nature, meetings and events are not always considered to have a large environmental impact, but they do contribute to the County's carbon footprint in a number of ways. They produce GHG emissions through the:

- Transportation used to get to and from the meeting;
- Energy used at the meeting;
- Disposal of waste generated during the meeting; and
- Refreshments served at the meeting.

Greening of operations extends well beyond event greening, and in fact the entire Climate Action Plan could be described as greening County operations. This strategy, however, deals more specifically with agencies taking the opportunity to green their own operations through participation in the County's Green Business Program – a program that addresses the environmental impacts of multiple aspects of a participating facility or agency's operations.

Co-benefits: Natural resource conservation; Demonstrates best practices; Cost saving

GHG Reduction Measures – Greening Events and Operations Strategy

This section describes the measures that make up the Cross Cutting Strategies action area – Greening Events and Operations strategy. Table 8 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[65]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 8 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 8: GHG REDUCTION MEASURES – GREENING EVENTS AND OPERATIONS STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
CC-8	Take steps to green all County-sponsored events (both internal events and public meetings)	3rd			
CC-9	Pursue official Bay Area Green Business recognition for County agencies, departments, and facilities	3rd			

CC-8 Take steps to green all County-sponsored events (both internal events and public meetings)

a. Develop a checklist of green event practices for use throughout the County
b. Establish zero waste guidelines for County events (e.g., avoid single-use beverage containers and disposable packaging, dishes, and utensils)
c. Locate events close to transit and provide directions for attending via public transportation
d. Encourage the provision of locally grown and locally produced food

Background and Description: Currently no comprehensive Countywide green event guidelines are available to agencies. Some agencies, such as the Environmental Health Department (within the Health Care Services Agency), have already assembled their own green events guidelines, which could be adapted for broader use. The County's Nutrition & Physical Activity Policy[66] states that when County funds are used to purchase food or beverage for meetings or events, local foods are recommended and low-waste catering practices should be used. Provision and promotion of such guidelines will help ensure that the County's environmental goals are incorporated in planning events. This becomes especially important at public events where the community looks to the County to show environmental leadership.

Hosting a green event means, at minimum, event planners should include directions on how to reach the meeting or event by transit, eliminate any unnecessary handouts, and provide

[65] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.
[66] Adopted by the Board of Supervisors on October 27, 2009.

appropriate recycling services. For larger events, further efforts should be made: to achieve zero waste by providing composting as well as recycling services and avoid packaging that will end up as trash; provide refreshments that are locally produced; to choose venues with convenient access to transit; and to purchase carbon offsets to make up for GHG emissions associated with travel to, and energy use at, the event.

Priority Tier: Third

CC-9 Pursue official Bay Area Green Business recognition for County agencies, departments, and facilities

Background and Description: The Bay Area Green Business Program, which started in 1997, provides user friendly guidelines for businesses and public agencies to follow to green their operations. The program relies on a checklist of items to install and practices to implement for a business to become established as a Green Business. Green Businesses are those that have taken steps to prevent pollution, minimize waste, conserve energy and water, and reduce vehicle-related emissions. The Green Business program also contains a verification component to ensure businesses are meeting the program's environmental performance standards.

The program is not a one-size-fits-all set of standards; it has been customized for many different types of businesses and operations. Since its inception more than 1,800 businesses and agencies have been certified. In Alameda County, the program is run by the County's Environmental Health Services Agency, which is also the first Alameda County agency to be officially recognized as a Green Business.

This measure calls for County agencies to pursue having their facilities recognized as Green Businesses. The first step in participation will be for agencies to conduct a review of green practices identified on a Green Business checklist and submit the results to the Green Business program coordinator for review. In order to be recognized as a Green Business, the agency would then be required to make any changes in their operations that are necessary to achieve the minimum requirements identified on the checklist. There is no fee to participate in the Green Business program other than any costs to bring facilities up to the program's standards.

Priority Tier: Third

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CHAPTER 5: BUILT ENVIRONMENT ACTION AREA

The Built Environment action area contains strategies and measures aimed at reducing greenhouse gas (GHG) emissions that result from the energy and fuel use associated with the County's physical infrastructure. This is a critical area of focus in the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan), as close to half of the County's greenhouse gas emissions come from the built environment (see Chapter 1 for more information on the County's GHG emissions inventory). The Built Environment action area encompasses emissions associated with:

- Electricity, natural gas, and other fuels used in the County's owned and leased buildings;
- Electricity used by the street and traffic light systems in the unincorporated areas of the County;
- Fuel used in stationary (non-vehicular) equipment, such as the pumps used for flood control; and
- Electricity associated with pumping, treating, and transporting the water used in and around County facilities.

The Built Environment action area includes four strategies for achieving emissions reductions. These strategies include promoting **energy efficiency and conservation** at County facilities, supporting **water conservation** in facilities and landscaping, encouraging the use of renewable **green power** sources, and enhancing the County's existing **green building** policies and efforts. These strategies apply to both owned and leased facilities.

In addition, state-level advocacy has been included because actions being considered for implementation by the State, such as increasing the amount of renewable power in the local electricity mix, will greatly enhance the ability of the County to achieve its reduction targets.

Alameda County Commitments to Climate Protection addressed in the Built Environment action area:

8. Reduce water use 20% by 2020 through implementing a comprehensive efficiency strategy for facilities and irrigation systems.
9. Increase the total share of renewable power being used by the County to 40% by 2020.
10. Establish an energy use reduction strategy to implement the behavior changes required for energy conservation as well as necessary equipment and operational efficiencies.
11. Update the County's green building policies to ensure use of the latest environmental standards for materials and systems in all owned and leased facilities, new construction, and renovations.

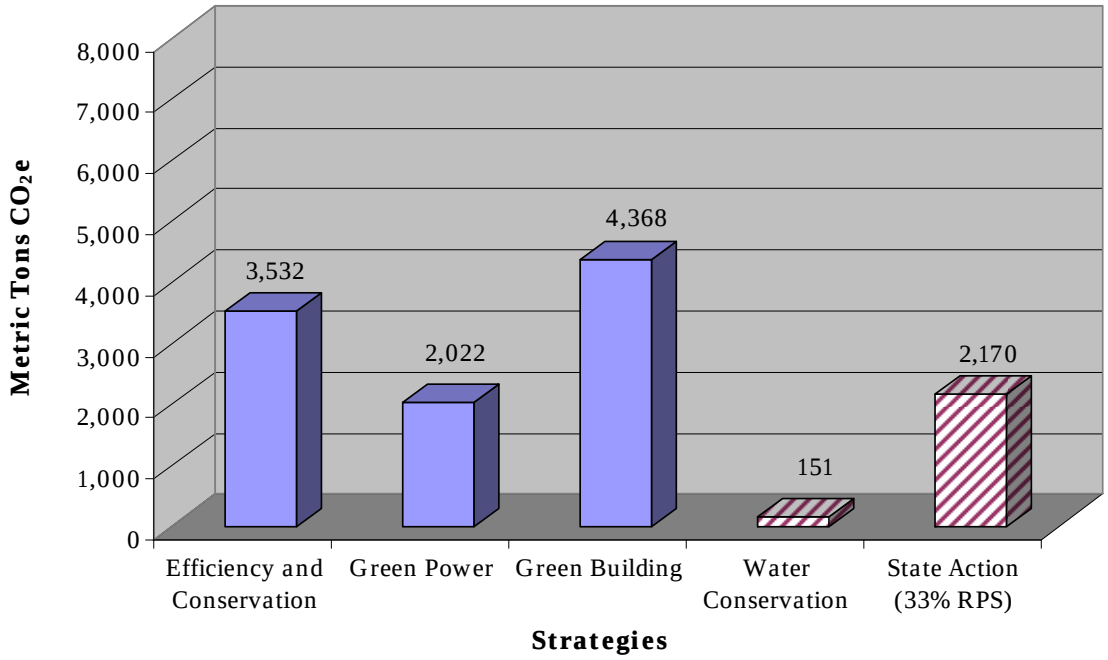
GHG Reductions: In 2020, the measures that the County takes in the Built Environment action area will **reduce predicted GHG levels by an estimated 9,922 metric tons CO_2e.**[67] Figure 9 shows a more detailed breakdown of the GHG reductions from each strategy in this action area.

[67] Note: The GHG reductions do not include state-level or lifecycle reductions, but rather refer only to the direct reductions related to meeting the County's target.

Monitoring and Reporting: Recommended monitoring and reporting includes (but is not limited to) establishing a systematic approach to:

- Tracking and reporting energy and water use at County facilities;
- Benchmarking building performance and publicizing the results;
- Documenting and reporting renewable power generation and purchases; and
- Tracking and reporting green building practices.

FIGURE 9: GREENHOUSE GAS REDUCTION POTENTIAL, BY STRATEGY, IN THE BUILT ENVIRONMENT ACTION AREA



Note: Strategies indicated by the striped bars include significant local reductions that occur as a result of the efforts of other actors (i.e., state-level action) or that occur outside of the scope of the County's greenhouse gas emissions inventory (e.g., lifecycle emissions from the pumping and treating of water).

EFFICIENCY AND CONSERVATION STRATEGY

Energy efficiency and conservation measures reduce the amount of energy wasted by inefficient facilities, equipment, and habits. A facility's mechanical and electrical systems (e.g., heating systems, air conditioning systems, lighting) are energy intensive and account for as much as 90% of an office building's natural gas use and more than 70% of its electricity use.[68] The structure of a building itself can also lead to inefficiencies if windows, roofs, and insulation are ineffective at preventing the loss of heated or cooled air. Therefore, it is important to install the most efficient building systems possible and ensure that major equipment is maintained and operating properly.

[68] Percentages are average for all office buildings in PG&E Climate Zone 5. From the "California Commercial End Use Survey," funded by the California Energy Commission and completed by Itron and available at capabilities.itron.com/CeusWeb/.

On the other end of the equation, office equipment (e.g., computer, printers, copiers) are estimated to consume 20% of the electricity used in office buildings. Engaging employees in efforts to turn off unneeded equipment and otherwise reduce the energy used in work stations and common areas is one of the most cost-effective strategies for minimizing emissions from the built environment.

The measures included in this strategy rely primarily on three approaches to achieve reductions:

- Empowering employees to make changes that reduce electricity and natural gas use;
- Investing in energy-efficient equipment and building systems; and
- Standardizing and evaluating energy-efficiency efforts to ensure that County buildings, workspaces, and equipment run at optimal efficiency.

These measures build on a long history of efficiency and conservation projects in County buildings, including a recent Countywide comprehensive lighting retrofit, and extensive measures taken at the Santa Rita Jail.

2020 GHG Reduction Potential: 3,532 metric tons CO_2e[69]

Co-benefits: Lower operating costs; Air pollution reductions

GHG Reduction Measures – Efficiency and Conservation Strategy

This section describes the measures that make up the Built Environment action area – Efficiency and Conservation strategy. Table 9 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[70]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 9 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

[69] Includes 308 metric tons CO2e from electricity reductions related to Cross-Cutting measure #2, the standardization of green IT efforts.
[70] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

TABLE 9: GHG REDUCTION MEASURES – EFFICIENCY AND CONSERVATION STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
BE-1	Encourage operational and behavioral changes that decrease the demand for energy and water in County facilities	1st			
BE-2	Conduct comprehensive building performance evaluations (retro-commissioning) to ensure major systems (e.g., mechanical, HVAC, lighting, controls) are operating at optimal efficiency	1st			
BE-3	Implement comprehensive energy reduction measures at the data center and other high-energy-use facilities	2nd			
BE-4	Establish a procedure to ensure that County buildings continue to operate at optimal efficiency	2nd			
BE-5	Tune up or replace inefficient equipment (e.g., boilers, motors)	2nd			
BE-6	Continue utilizing efficient indoor lighting strategies in County facilities	2nd			
BE-7	Optimize thermostat settings and set a Countywide building temperature standard	2nd			
BE-8	Install high-efficiency outdoor area lighting (e.g., streetlight) technologies as practicable	3rd			
BE-9	Investigate building envelope (e.g., windows, walls, roofs) upgrades to County buildings to minimize heating and cooling needs	3rd			

BE-1 Encourage operational and behavioral changes that decrease the demand for energy and water in County facilities

a. Issue Countywide guidelines and recommendations on ways employees can maximize energy efficiency through individual actions
b. Develop and implement a policy on the use of desktop equipment and personal appliances
c. Institute facility walk-throughs at the end of the day to turn off equipment
d. Increase participation in peak-load management, demand-response, and smart metering programs
e. Provide energy-efficiency training for maintenance staff and employees
f. Evaluate building use patterns and work schedules to maximize conservation
g. Promote the building maintenance hotline for employee use to report energy and water inefficiencies at County facilities

Background and Description: Technological solutions alone will not be enough to meet the ambitious GHG reduction targets being pursued by the County. The actions contained here are aimed at reducing wasteful energy use by adopting policies and procedures that promote more efficient operation of facilities, as well as working with employees to make simple behavior changes that save energy.

For example, employees can be engaged in energy saving efforts, like turning equipment off when not in use, through energy-efficiency training and clear guidelines (e.g., last person out at the end of the day turns off copiers). Establishing a written policy on what types of equipment are allowed in workstations (called a plug-load policy) is a policy-driven approach to reducing workstation energy use that can also be effective.

On the operational side, energy conservation can be achieved by adjusting employee schedules to reduce the amount of time that building systems are operating when only a handful of people are actually present. Another option is for facilities to participate in utility company sponsored demand-response programs. Through these programs, participants volunteer to curtail their facility's electricity use during times of peak electricity demand (e.g., midday during heat waves when air conditioning use skyrockets) in exchange for incentive money. Demand-response programs contribute to State efforts to reduce the need for building new power plants.

While these actions can be implemented at relatively low cost, they can be challenging as they require broad participation from County employees. As a 2009 University of Oregon report notes, "getting people to focus on and participate in an energy reduction program can be a significant behavioral change itself."[71] The same report identifies several tools and approaches that have been most successful in achieving GHG reductions through behavior change, such as focusing on efforts that produce cost savings, providing tailored information and feedback to participants, goal setting, and approaching the effort in a variety of different ways that build on each other.

In addition, many of these actions will potentially have impacts beyond County operations as employees incorporate more energy-efficient practices into their non-work surroundings.

Priority Tier: First

Potential next step(s): Assign resources (e.g., staff, qualified interns) to develop employee education and outreach programs based on successful examples. Review and evaluate status of current and past participation in demand-response programs, smart metering efforts as well as existing building use patterns to assess opportunities.

[71] Markowitz, Ezra M., and Bob Doppelt, "Reducing Greenhouse Gas Emissions Through Behavioral Change - An Assessment of Past Research on Energy Use, Transportation and Water Consumption," in *Climate Leadership Initiative, Institute for a Sustainable Environment* (January 2009).

BE-2 Conduct comprehensive building performance evaluations (retro-commissioning) to ensure major systems (e.g., mechanical, HVAC, lighting, controls) are operating at optimal efficiency

a. Perform retro-commissioning on targeted County facilities and implement recommendations
b. Assess the feasibility of expanding the retro-commissioning project to include additional facilities
c. Develop long-term plan for retro-commissioning all prioritized facilities

Background and Description: Retro-commissioning is a process that restores buildings to their optimal performance. Specialists inspect major building systems (HVAC, lighting, etc.) and interview maintenance staff and building occupants to assess a building's performance and identify opportunities to improve the efficiency of its operation. Retro-commissioning focuses on tuning up equipment rather than costly replacements. (The process may in some cases uncover equipment that does need to be replaced, which is dealt with in measure BE-5.) The process focuses on the functioning of a building's existing equipment and controls systems, such as lighting controls, mechanical equipment, and heating, ventilation, and air conditioning (HVAC) systems.

At the time of this writing, the County is working with its local utility provider, Pacific Gas & Electric (PG&E), to conduct a retro-commissioning effort on the HVAC systems in 11 large County buildings.[72] The cost of conducting the retro-commissioning study is being covered by PG&E from a pool of State efficiency money that is collected through utility bills and administered by PG&E. The costs of implementing the resulting recommendations are not included in the project. The GHG reductions from this measure are dependent on implementation of the actions uncovered during the facility audits. PG&E estimates that energy savings from retro-commissioning can lead to cost savings of as much as 15% of a building's energy costs.[73] Should the current effort yield significant energy savings, the County should look at conducting an additional round of retro-commissioning studies to include additional facilities.

Priority Tier: First

Potential next step(s): Complete the current retro-commissioning project, implement measures, and track and analyze the results.

BE-3 Implement comprehensive energy reduction measures at the data center and other high-energy-use facilities

Background and Description: The County's central data center, which houses equipment used for data processing, data storage, and communications, is an essential facility that supports all aspects of the County's operations as well as the ability to deliver services to the public. It also serves a vital role regionally, acting as the data hub for Bay Area law enforcement agencies. As a result of the large number of computers and equipment they house, data centers tend to be extremely energy intensive. As the County shifts towards providing more services in a digital

[72] Specific buildings were targeted in part because they have automated HVAC systems. Buildings without automated systems are less likely to achieve significant results from retro-commissioning.
[73] PG&E, "Retrocommissioning Fact Sheet." C-1590. 2009 available at www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/analyzer/retrocommissioning/09%20RCx%20FS%20v5.pdf (accessed April 7, 2010).

format, demand for data center services will likely increase, along with the energy costs and GHG emissions associated with those centers.

Fortunately, there is a growing body of research on energy-efficiency best practices aimed specifically at data centers. A number of efficiency efforts have already been taken at the County's data center, such as the recent installation of a new high efficiency chiller. Nevertheless, further improvements can be made. A July 2009 report, funded through PG&E (which administers State energy efficiency funds), identified a number of actions that can be taken at the County's Data Center to further reduce energy use. There may also be opportunities to investigate implementing similar actions in other facilities, such as the smaller data centers housed by County agencies.

Priority Tier: Second

BE-4 Establish a procedure to ensure that County buildings continue to operate at optimal efficiency

a. Conduct regular evaluations of building performance and conditions
b. Install advanced energy and environmental controls as appropriate
c. Provide facility managers with the support they need to maximize building operation efficiency

Background and Description: A proactive approach to adjusting building operations and maintenance is essential to maximizing energy efficiency over the long term. This measure calls for a procedure to be put in place to regularly assess a building's overall condition, performance, and use of modern environmental controls (e.g., light sensors). Building performance evaluations can be obtained through using tools, such as the EPA's Energy Star Benchmarking tool, that rates a building's energy performance as compared to other buildings in its class.

Recognizing that facility managers are critical to maintaining a building's optimal efficiency and are on the front line in dealing with building maintenance issues, this measure also calls for providing them with additional support. This could take the form of providing training and guidelines to building occupants on energy programs, establishing new protocols for maintenance issues, and developing polices that explicitly support these actions.

Priority Tier: Second

BE-5 Tune up or replace inefficient equipment (e.g., boilers, motors)

a. Implement boiler audit recommendations
b. Continue programs for regular equipment maintenance and upgrading to more efficient models

Background and Description: In December 2009, the County received the results of a PG&E-funded boiler audit recommending the retrofit and replacement of boilers in seven County buildings. This boiler audit was conducted to bring the County into compliance with nitrogen oxide emissions standards, however, these measures will also increase the efficiency of the boilers and therefore reduce fuel usage and GHG emissions. The costs to implement the recommendations will have to be covered by the County unless another source of funding is

found. According to a 2003 PG&E report "a high-efficiency boiler tune-up performed by a properly trained technician can improve average combustion efficiency by 2 to 10%."[74]

In addition to completing the boiler audit recommendations, this measure also calls for the County to be diligent in conducting regular maintenance activities on high-energy-use equipment such as boilers and motors and to consider upgrades and replacements where appropriate.

Priority Tier: Second

BE-6 Continue utilizing efficient indoor lighting strategies in County facilities

a. Make use of natural lighting in County facilities
b. Continue to implement efficient indoor lighting technologies

Background and Description: A comprehensive indoor lighting retrofit was conducted on 50 County facilities between March 2008 and April 2009. 26,000 lighting fixtures in over 3 million square feet of space were retrofitted or replaced with more efficient fixtures. This resulted in annual electricity reductions of 3,024,124 kilowatt-hours (KWh) and cost savings of almost $410,000 per year. Following this retrofit, a lighting specification was developed to identify the lighting efficiency requirements to be applied to all projects (new construction and retrofits).

This measure calls for the County to continue to install highly efficient lighting systems and use natural light wherever possible as the County's building portfolio changes through addition of new facilities and major and minor renovations of existing facilities. According to the American Council for an Energy Efficient Economy, "if all commercial buildings installed state-of-the-art energy-saving lighting systems, their lighting energy use could be reduced by at least 40%."[75]

Priority Tier: Second

BE-7 Optimize thermostat settings and set a Countywide building temperature standard

Background and Description: Discussions with the County's building maintenance and energy staff indicate that temperatures settings in some County facilities can be as much as 10 degrees too high or too low. Issuing a Countywide standard on temperature settings is a cost-effective way to reduce energy costs as well as GHG emissions associated with heating and cooling. PG&E recommends cooling buildings to 78 degrees in the summer and heating to 68 degrees in the winter. A key to the success of this measure will be working with employees and providing them with information on the program in order to build acceptance of the measure. Any feedback on employee comfort will also need to be addressed quickly and adequately. Adjusting the dress code during the hottest days is one example of how potential concerns can be addressed.

Priority Tier: Second

[74] PG&E, "California Statewide Commercial Sector Natural Gas Energy Efficiency Potential Study," May 2003.
[75] Nadel, Steven. "Saving Lighting Energy in Commercial Buildings," American Council for an Energy-Efficient Economy (ACEEE), www.aceee.org/press/op-eds/op-ed5.htm (accessed April 7, 2010).

BE-8 Install high-efficiency outdoor area lighting (e.g., streetlight) technologies as practicable

Background and Description: In 1970, the Board of Supervisors established the Street Lighting County Service Area, which defines the areas of the unincorporated County where street lighting is provided. Since the service area's establishment, the street lighting system has advanced from mercury vapor technology to more efficient high pressure sodium, and has grown based on new growth and community demand for increased street lighting.

The County will continue to investigate and install technologies that increase the efficiency of outdoor lights. This includes properly placing and spacing lights, installing energy-efficient technologies, and using fixtures that direct light where it is needed and not into the night sky.

LED technology is emerging as a more efficient alternative to high pressure sodium for street lighting. In addition to being more efficient than high pressure sodium, LED street lights do not use mercury and are directional, reducing the amount of light pollution that occurs at night. Cities such as Oakland and San Francisco are currently engaged in pilot projects to test LED technology, and PG&E offers a turnkey incentive program for local governments interested in installing this technology. As this technology (or another more efficient technology) emerges, the County should be poised to adopt new technologies and take advantage of incentives aimed at early adopters.

Priority Tier: Third

BE-9 Investigate building envelope (e.g., windows, walls, roofs) upgrades to County buildings to minimize heating and cooling needs

a. Assess potential for utilizing cool (highly reflective and emissive) or green roofs on new and existing facilities
b. Investigate weatherization opportunities for County facilities (e.g., windows, duct work, insulation)

Background and Description: The building envelope or shell (i.e., the windows, walls, roofs, and foundation of a building) provides the insulating barrier between the indoor and outdoor environments. Leaks, poor insulation, and other inefficiencies allow heated or cooled air to escape, requiring additional heating or cooling energy to keep the building comfortable. This both increases energy bills and the GHG emissions associated with the extra energy use. Other options for improving the building envelope include installing double-pane windows, sealing leaks, and improving insulation.

In addition to their insulating effect, roofs that utilize reflective roofing materials lower the air conditioning needs of a building by reflecting rather than absorbing solar heat energy. The County should use more advanced roofing systems when reroofing buildings where it makes financial sense and where the materials meet maintenance requirements. The County already has reflective roofing on the Juvenile Justice Center, Santa Rita Jail, and the Wiley M. Manuel Courthouse. In addition, the County should investigate piloting green roof technologies, which use vegetation for roofing material, have a natural cooling effect, and provide about 25% more insulating layer (helpful in cold months). Green roofs also present the extra benefit of absorbing storm water, thus reducing the impact storm events will have on sewer systems.[76]

[76] Scholz-Barth, Katrin. "Green Roofs: Stormwater Management From the Top Down" *Environmental Design + Construction Magazine*, January 15, 2001.

The primary barrier to these measures is cost. While green roofs often attract outside funding sources, it is difficult to find funding for more basic upgrades. To the extent possible, the County should look for opportunities to incorporate this type of work in the construction phase of projects, or during major renovations, and should consider these costs from a lifecycle perspective.

Priority Tier: Third

WATER CONSERVATION STRATEGY

The County currently uses about 260 million gallons of water a year for both its buildings and landscaping. The GHG emissions associated with water use are from the use of electricity to supply, distribute, and treat the water. California's water system accounts for about 19% of the state's total electricity use.[77] Although this energy use primarily occurs outside of the County's jurisdiction, reducing water consumption helps minimize the County's total climate impact.

Emissions reductions are not the only reason to reduce water consumption. Water conservation is essential in preparing for the impacts of climate change. The snowpack in the Sierra Nevada Mountains is the primary source of the East Bay's water supply.[78] Over the past forty years, this snowpack has shrunk by 5%, a trend that is expected to continue as temperatures warm. In addition, with longer growing seasons, drier soil, and increased heat wave days caused by climate change, competition and demand for water is expected to increase.[79]

The 20% reduction in water use called for in the County's Commitments to Climate Protection is in line with the 20% per capita reduction in water use by 2020 called for in the State's *2009 California Climate Adaptation Strategy*.[80] The County has already begun this effort by implementing a large water reduction project at Santa Rita Jail as well as installing several Bay Friendly landscaping projects at County facilities that require far less water than traditional landscaping.

2020 GHG Reduction Potential: No direct emissions reductions (151 metric tons CO_2e lifecycle reductions)[81]

Co-benefits: Adaptation to predicted water scarcity; Natural resource conservation

[77] California Energy Commission Final Staff Report, "California's Water – Energy Relationship," CEC-700-2005-011-SF, November 2005.
[78] Approximately 65% of the state's water comes from sources in the Sierra Nevada range, which is also the source of water for the East Bay Municipal Utility District. More information available at www.ebmud.com/our-water/water-supply/current-water-supply-outlook/water-system-map.
[79] Wallis, Michael J., Michael R. Ambrose, Clifford C. Chan. "Climate change: Charting a water course in an uncertain future." Journal: American Water Works Association. June 2008. Also available at www.ebmud.com/sites/default/files/pdfs/Journal-06-08_0.pdf (accessed April 7, 2010).
[80] This report was produced by the California Natural Resources Agency and is available at www.climatechange.ca.gov/adaptation/index.html (accessed April 7, 2010).
[81] Reductions from water conservation measures occur outside of the scope of the County's GHG inventory and are therefore are not counted towards the County GHG reduction target.

GHG Reduction Measures – Water Conservation Strategy

This section describes the measures that make up the Built Environment action area – Water Conservation strategy. Table 10 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[82]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 10 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 10: GHG REDUCTION MEASURES – WATER CONSERVATION STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
BE-10	Develop and implement a comprehensive water conservation and efficiency program	2nd			

BE-10 Develop and implement a comprehensive water conservation and efficiency program

a. Identify preventive maintenance measures to address water leakage in County facilities and water systems
b. Install water conservation devices and efficient fixtures as practical
c. Use native plants and low-water landscaping at County facilities
d. Utilize the most water-efficient technologies practical where irrigation is needed
e. Provide employee outreach and training to promote water conservation through operational and behavioral changes
f. Investigate opportunities for utilizing greywater and reclaimed water in new construction and major retrofits

Background and Description: The County has already begun this effort by implementing a large water reduction project at Santa Rita Jail as well as installing Bay Friendly landscaping projects that require far less water than traditional landscaping. In addition, the County has installed water-saving devices such as low-flow toilets, faucet aerators, and pre-foamed soap at several buildings. This measure calls for the County to continue on this path and to investigate new technologies and opportunities to achieve the state-recommended 20% water reduction target in all facilities. Once again, County employees will be critical to ensuring the success of this measure. Reporting leaks and other wasteful situations will help maintenance employees respond in a timely fashion.

Priority Tier: Second

[82] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

GREEN POWER STRATEGY

Green power refers to energy generated from sources (often the sun or wind) that produce less pollution than electricity or natural gas purchased from utilities. Over the past 10 years, the County has established itself as a national leader in generating green power, with 10 solar systems installed on County buildings. Collectively, these solar systems generate almost four million KWh of electricity a year, eliminating 1,100 metric tons of GHG emissions a year and reducing annual operating costs by more than $500,000.

In addition, the County installed the state's first megawatt-class fuel cell cogeneration plant at Santa Rita Jail. This advanced technology fuel cell system generates electricity 24 hours a day, using far less fuel than a traditional power plant. It also captures and uses waste heat for water and space heating, further increasing the efficiency of the fuel cell.

The measures included in this strategy call for the County to expand its onsite renewable generation capacity and pursue projects that demonstrate the effectiveness of new green power technologies that are on the verge of market readiness (e.g., solar thermal for commercial water heating). Work in this area is already underway. County staff responsible for developing new renewable energy projects are constantly generating new ideas and investigating funding opportunities. The key to being able to undertake renewable projects in the future, as has been the case with previous projects, will be aggressively pursuing and securing outside funding to offset as much of the capital costs as possible.

Fulfillment of the County's commitment to deriving 40% of its electricity from green sources is closely linked to State mandates surrounding the amount of renewable power electric utilities will be required to provide by 2020.[83] If the utilities do not get 33% of their electricity from renewable sources, as called for in the Governor's 2008 Executive Order,[84] it will be challenging for the County to achieve its goal of increasing its use of renewable power to 40% by 2020. For more on this, see the state-level strategy at the end of this Chapter.

2020 GHG Reduction Potential: 2,022 metric tons CO_2e

Co-benefits: Air pollution reductions; Energy independence

[83] The amount of green power in the County's electricity mix is equal to the amount of purchased electricity from renewable sources plus the amount of onsite generation divided by the total energy use. Therefore, as more green power is provided by the utility company, less green power will need to be generated on site.
[84] Executive Order S-14-08 issued by Governor Schwarzenegger in November 2008.

GHG Reduction Measures – Green Power Strategy

This section describes the measures that make up the Built Environment action area – Green Power strategy. Table 11 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[85]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 11 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 11: GHG REDUCTION MEASURES – GREEN POWER STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
BE-11	Actively expand the County's use of renewable energy to meet the 40% green power target	1st			
BE-12	Investigate the utilization of advanced technology energy systems (e.g., fuel cells, smart grid systems)	3rd			
BE-13	Investigate and implement solar thermal water heating as appropriate	3rd			

BE-11 Actively expand the County's use of renewable energy to meet the 40% green power target

a. Focus on developing new sources of on-site generation
b. Investigate potential for green power purchasing
c. Purchase green tags or renewable energy certificates as necessary to reach the renewable power target
d. Evaluate financial models that enable rapid adoption of renewable energy

Background and Description: For the past 10 years, the County has been a pioneer in installing photovoltaic systems at County facilities. These systems are saving the County over $500,000 a year in energy costs. The County's success has been achieved because staff have actively sought out funding opportunities and combined the renewable systems with comprehensive energy-efficiency projects. Ten photovoltaic systems are in place, reducing GHG emissions by approximately 1,120 metric tons per year. This measure sets out the ambitious but achievable goal of achieving 40% renewable power for County operations by 2020.[86]

Increasing the County's onsite renewable energy generation, which has the added benefit of increasing the County's energy independence, is the preferable option for meeting the green power goal, followed by purchasing green power generated by other power providers. The purchase of green tags, also called renewable energy certificates, would only come into play in

[85] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.
[86] More information on this goal and a discussion of its connection to the State's Renewables Portfolio Standard is available in the State Level Strategy section of this chapter.

the event that the County does not meet the 2020 goal through onsite generation projects. Green tags are financial commodities that represent the environmental benefits associated with renewable energy.[87] The inclusion of green tags here is intended to motivate the County to install additional renewable generation capacity on its facilities, not as an end in itself.[88]

Priority Tier: First

Potential next step(s): Continue to actively pursue onsite green power generation projects.

BE-12 Investigate the utilization of advanced technology energy systems (e.g., fuel cells, smart grid systems)

Background and Description: Due in large part to their ability to secure grant funding for projects that demonstrate the effectiveness of up-and-coming technologies, local governments have played an important role in advancing technologies that have not yet reached their full market potential. The County's large cogeneration fuel cell at the Santa Rita Jail is one such example. The County should continue to track and pursue these types of opportunities.

Priority Tier: Third

BE-13 Investigate and implement solar thermal water heating as appropriate

Background and Description: This measure is aimed at accelerating the deployment of solar thermal water heating systems on County buildings. Solar thermal systems use the sun to heat water in the place of traditional natural gas or electric powered hot water heating systems. The County does not currently have a solar thermal system at any of its facilities, but is studying the possibility for installing a large scale system at Santa Rita Jail. The State of California is also currently in the pilot phase of designing a statewide solar thermal incentive program. The State's goal is to install hundreds of thousands of solar thermal heating systems by 2017. Therefore, this is a promising new area for the County to get involved in over the next decade.

Priority Tier: Third

GREEN BUILDING STRATEGY

This strategy deals with whole buildings and County occupied leased spaces. Buildings and leased spaces are responsible for an estimated 44% of the County's GHG emissions.[89] In addition, the quality of a building's indoor environment (e.g., indoor air quality, acoustics) has a real impact on worker health and safety. Building construction and demolition also has significant environmental impacts. Recognizing this, the County passed a green building ordinance in 2003. One of its requirements is that new construction at County facilities achieve

[87] In order to sell a green tag, an energy generator essentially separates the rights to the environmental benefit of the renewable power they generate from the sale of the actual electricity. The generator (and the purchaser of their electricity) then forfeits any claim to those environmental benefits, which the purchaser of the tag is then able to claim.
[88] The purchase of green tags or renewable energy certificates would be an annual cost to the County for as long as the renewable target remains unmet.
[89] The whole of Built Environment action area is responsible for closer to 50% of total emissions; however, this also includes pumps and outdoor lighting systems, which are not included in the 44% figure for building specific emissions.

at least a Silver level designation in the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) program.[90] The LEED® certification program is an internationally recognized, third-party system for benchmarking the design, construction, and operation of high performance green buildings. Its rating system for new construction examines attributes such as sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

Green buildings have been shown to outperform standard buildings in a variety of metrics. For example, one recent study showed that, on average, LEED-certified buildings "perform 25% to 30% better than non-LEED certified buildings in terms of energy use."[91] The County's Green Building Ordinance has already resulted in two large-scale green building projects. The Juvenile Justice Center was the first green juvenile detention center in the country to achieve LEED Gold certification (surpassing the Ordinance's requirement). The recently completed Castro Valley Library will be the first LEED certified library in Alameda County and serves as a vital hub for the community.

This strategy calls for expanding the Green Building Ordinance and improving how it is implemented, but it is not limited to measures dealing with LEED certification. Other measures call for the County to examine the location of its buildings in relation to the population they serve in order to reduce transportation-related emissions and improve service delivery. There is also a measure recommending the development of standard green lease language that will enable the County to reduce emissions associated with leased spaces. The measures in the green building strategy complement both the Green Building Ordinance and the recently adopted Real Estate Master Plan.

2020 GHG Reduction Potential: 4,368 metric tons CO_2e

Co-benefits: Improved indoor air quality and occupant comfort; Lower operating costs; Natural resource conservation; Reduced construction waste; Enhanced asset value

GHG Reduction Measures – Green Building Strategy

This section describes the measures that make up the Built Environment action area – Green Building strategy. Table 12 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[92]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 12 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

[90] Alameda County Green Building Ordinance No. 2003-63.
[91] Turner, Cathy, and Mark Frankel. "Energy Performance of LEED® for New Construction Buildings," prepared by New Buildings Institute for the U.S. Green Building Council, March 4, 2008. Available at www.usgbc.org/ShowFile.aspx?DocumentID=3930.
[92] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

TABLE 12: GHG REDUCTION MEASURES – GREEN BUILDING STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
BE-14	Routinely evaluate, review the effectiveness of, and update the County's municipal Green Building Ordinance to ensure that it meets or exceeds the industry's best practices and progressive standards	1st			
BE-15	Develop green lease language for use in the County's standard lease agreement	1st			
BE-16	Continue to implement green building practices at Santa Rita Jail	1st			
BE-17	Set standards for efficient use of facility space	1st			
BE-18	Develop and integrate technical specifications and standards for green building materials and systems into project design, standard construction documents, and all construction-related contracts	3rd			
BE-19	Upgrade and retrofit fire stations with green features	3rd			
BE-20	Examine the physical location of County departments and services to reduce employee and customer vehicle travel	3rd			

BE-14 Routinely evaluate, review the effectiveness of, and update the County's municipal Green Building Ordinance to ensure that it meets or exceeds the industry's best practices and progressive standards

a. Expand the Green Building Ordinance to apply to built-to-suit (constructed to meet the County's needs as a long-term tenant), leased properties, tenant improvements, and the purchase of existing buildings
b. Develop mechanisms to ensure compliance with the Green Building Ordinance's procedures for small projects
c. Adopt green building standards for existing facilities (e.g., LEED for Existing Buildings)

Background and Description: The County's 2003 municipal Green Building Ordinance requires that construction of new County owned buildings achieve a LEED Silver rating or a County approved equivalent of that rating.[93] Projects whose budgets are under five million dollars are eligible for self-certification if pursuing official LEED status is cost prohibitive due to their small size. This measure calls for a strengthening of the self-certification process to ensure that small construction projects are monitored for adherence to green building requirements. It also calls for the expansion of the Green Building Ordinance to place green building requirements on built-to-suit spaces, major tenant improvements, and purchased and leased buildings.

[93] Alameda County Green Building Ordinance No. 2003-63.

Lastly, this measure supports the Real Estate Master Plan's call for the County to "continue its commitment to excellence in sustainability by expanding its green building practices to its existing facilities. More specifically, the County should consider LEED-EB certification for its current portfolio of buildings."

Priority Tier: First

Potential next step(s): Assemble a working group to manage updating the Green Building Ordinance.

BE-15 Develop green lease language for use in the County's standard lease agreement

Background and Description: Although new County-owned facilities are subject to the Green Building Ordinance, the County also occupies a significant amount of leased space. Currently there is no mechanism to ensure that leased facilities meet the same environmental standards as owned facilities. This presents agencies that occupy leased spaces with a significant obstacle to reducing their carbon footprint. One especially pervasive barrier to achieving GHG reductions in leased space is termed the split incentive. This occurs when the tenant pays the utility bill, and therefore the landlord has no incentive to install energy-efficient equipment, or alternately, when the utility bill is rolled into the rent, and the tenant receives no financial benefit from installing energy-efficient equipment. The split incentive can be addressed by developing an agreement in the lease that allows both landlord and tenant to benefit from utility savings.

This measure calls for the development of green lease language for use in all lease agreements in order to create a means for improving the environmental performance of leased space. A typical green lease contains provisions related to:

- Negotiating terms for operational charges (e.g., utilities) that provide incentives for energy efficiency and water conservation measures by both the tenant and the lessor;
- Requiring the use of green cleaning products and materials by the landlord's janitorial service;
- Establishing adequate recycling and composting services; and
- Allowing for a variety of transportation options (e.g., carpools, promotion of mass transit, bicycles).[94]

Priority Tier: First

Potential next step(s): Develop green lease language and negotiating positions and begin incorporating green lease language into lease negotiations.

[94] List is based on a PowerPoint presentation entitled "Elements of a Green Lease – Owner's Perspective" presented June 30, 2008 to the Business Council on Climate Change by Ken Cleaveland of the San Francisco Building Owners and Managers Association.

BE-16 Continue to implement green building practices at Santa Rita Jail

a. Implement comprehensive landscaping water conservation at Santa Rita Jail
b. Develop a strategy and timeline for the jail to become net zero emissions

Background and Description: Santa Rita Jail is the largest single source of GHG emissions of any County facility. As a large, 24/7 residential facility, it has significant energy and water needs. The jail has already been the focus of large scale energy and water projects, including a solar photovoltaic system, a fuel cell plant, the installation of water conservation devices, lighting retrofits, and food waste composting, all of which have greatly reduced the jail's footprint. A number of additional projects are being considered for implementation at the jail, including a solar thermal water heater and replacement of water intensive lawns. This measure calls for a continuation of emissions reduction efforts at the jail and a strategy to achieve a long-term goal of achieving zero emissions. The sheer size of Santa Rita Jail means that meeting such a goal would contribute significantly to the County's climate stabilization target.

Priority Tier: First

Potential next step(s): Hold a brainstorming session with staff and invited experts to define what achieving zero emissions at Santa Rita Jail would encompass.

BE-17 Set standards for efficient use of facility space

a. Consider options for more efficient space utilization in new and existing facilities
b. Investigate opportunities for utilizing alternative workspace strategies (e.g., hoteling, leveraged work stations)

Background and Description: In 2009, the County adopted a Real Estate Master Plan with the goal of improving the value of County real estate and identifying best practices to be implemented. One of the best practices identified in the Master Plan is efficient space utilization. The Master Plan study showed that the County's Oakland and Hayward buildings used, on average, 340 square feet per employee. This is considerably higher than other counties in the state, which average about 275 square feet per person.

The Master Plan forecasts a 28% growth in employees by 2028 but finds that by adopting a more stringent space standard, only 9% more space would be required to accommodate the additional employees. Less space means that less energy is required to heat, cool, and light County facilities. This measure calls for the County to move towards more efficient space utilization. It also recommends looking into new ways to use existing space, such as the use of shared space and hoteling arrangements for employees who primarily work in the field and do not require a dedicated space forty hours a week.

This measure is intended to be applied to both owned and leased space. Efficient space utilization can lead to significant financial savings related to energy costs and rent. (It may be difficult to fully capture the potential cost savings as many of the lower-cost leased spaces the County occupies have irregular configurations that make efficient space utilization challenging.)

Priority Tier: First

Potential next step(s): Establish space utilization guidelines that are in line with the recommendations of the Real Estate Master Plan.

BE-18 Develop and integrate technical specifications and standards for green building materials and systems into project design, standard construction documents, and all construction-related contracts

Background and Description: Technical specifications for green building materials, such as the County's carpet and lighting specifications, help ensure that construction and renovation projects adhere to green requirements and that the most environmentally friendly equipment and materials are used in County facilities. Specifications also make the design process more efficient by providing guidance on which products are in compliance with green requirements. This measure calls for not just the development of new specifications and standards but also the integration of those standards at the appropriate points in the design and construction phases of a project.

Priority Tier: Third

Potential next step(s): Create a working group consisting of relevant County staff (e.g., the Building Maintenance Division, architects, sustainability staff) to create a list of new specifications to be developed and to make recommendations on ways to ensure that employees and contractors adhere to these standards.

BE-19 Upgrade and retrofit fire stations with green features

Background and Description: Fire stations operate 24 hours a day, seven days a week and include living quarters as well as work areas. Therefore, they tend to be larger energy users and are strategic targets for emissions reduction efforts. They are also high-profile facilities that can demonstrate best practices to the community. The residential nature of these buildings means that practices they adopt (e.g., lighting, insulation measures) may resonate with homeowners.

Firefighters have a strong motivation for addressing climate change since they will be directly affected by the predicted increase in wildfires that climate change will cause. In addition, community education is already an important component of firefighter's job duties, and a relevant climate message may be a good fit for their outreach efforts.

Priority Tier: Third

BE-20 Examine the physical location of County departments and services to reduce employee and customer vehicle travel

a. Implement strategies to locate services throughout the County and in proximity to target populations
b. Co-locate agencies that work closely together or provide related services
c. Make proximity to transit a priority when making infrastructure investments
d. Investigate new opportunities for providing distributed services (e.g., e-government kiosks, mobile services)

Background and Description: The location of County facilities has a large impact on transportation-related GHG emissions. Locating services close to the members of the public who will need the services will decrease the amount of travel required to access those services and increase the ability of the public to walk and bike when visiting County facilities. Locating County offices near BART and major bus lines will increase the travel options available to the public when accessing County services. Not only do transit-accessible locations reduce

transportation-related GHG emissions, they also increase the ability of underserved populations and all residents to access County services.

Similarly, locating agencies that provide related services in close proximity to each other both reduces the length and number of trips the public needs to make to access services and the trips County employees make between offices. It is important to integrate these considerations into the decision-making process regarding the siting of facilities. Successful implementation of this measure will require the involvement of decision makers and staff experts with authority over long-range planning and real estate decisions for County operations.

Priority Tier: Third

STATE-LEVEL ADVOCACY

The State of California has the ability to implement a number of policies and programs that will have an impact on the County's energy use and GHG emissions. One of the more significant of these is the development of a Renewables Portfolio Standard (RPS). An RPS is a regulation requiring a certain amount of eligible renewable power be included in a jurisdiction's (usually the State's) electricity mix.[95] The current California law requires utilities to achieve an RPS of 20% by 2010.[96] In 2008, the Governor issued an executive order calling for a State RPS of 33% by 2020.

According to the Scoping Plan for the California *Global Warming Solutions Act of 2006* (AB32), the California Energy Commission and the California Public Utilities Commission believe that the Governor's enhanced RPS is achievable if the State invests in transmission infrastructure, removes barriers, and solicits broad participation from many parties. Many state agencies are collaborating with the utility companies and other stakeholders to formally adopt and meet the 33% RPS goal.[97] Since California is looked to as a leader in the areas of climate change, renewable power and energy efficiency, any retreat from the 33% RPS could have ramifications for national and international energy policy.

An aggressive California RPS would make a significant contribution to Alameda County's greenhouse gas reduction target with minimal investment required on the County's part. Therefore, it is in the County's best interest to actively advocate for achieving the 33% RPS both to meet its goals and to achieve greenhouse gas reductions statewide.

2020 GHG Reduction Potential: 2,170 metric tons CO_2e

Legislative action item: Track and support implementation of the 33% by 2020 Renewables Portfolio Standard

[95] The State of California defines which sources are eligible to count towards the renewable standard. Some low emissions sources of electricity (e.g., large hydro power and nuclear) are excluded due to other environmental issues.
[96] The amount of eligible renewable energy in PG&E's electricity mix was 15% as of November 2009. The company does not expect to meet the State's 2010 RPS requirements until 2011, at least one year behind schedule.
[97] California Air Resources Board, "Climate Change Scoping Plan: a framework for change," December 2008. See www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm.

CHAPTER 6: TRANSPORTATION ACTION AREA

The Transportation action area contains strategies and measures aimed at reducing emissions from vehicle travel, which account for over half of the County's total greenhouse gas (GHG) emissions. Vehicle travel is also one of the primary sources of air pollutants in the region. County employee commutes to and from the workplace are the largest single source of GHG emissions in the County's emissions inventory, at 39%. Vehicle use on the job accounts for another 12% of the County's emissions.[98]

Measures identified in the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) to reduce those emissions rely on personal decisions about commute practices, having the technology and polices in place to encourage alternative travel patterns, and investments in infrastructure and vehicles that promote alternatives to the single-occupancy fossil-fuel-powered vehicle. A number of new technologies entering the market (e.g., electric and other advanced fuel vehicles, virtual office systems) and policy options (e.g., flexible work arrangements, building locations, parking policies) will decrease reliance on vehicle travel and encourage more sustainable options.

The Transportation action area includes three strategies for achieving emissions reductions. These strategies include promoting **non-motorized transportation,** like walking and biking, as a healthy way to access County facilities, launching **commuter programs** designed to encourage alternatives to the single-occupancy vehicle commute, and advancing **green fleets** policies, practices, and technologies to reduce the emissions associated with County vehicles.

In addition, state-level advocacy has been included because actions being considered for implementation by the State, such as the low-carbon fuel standard, fuel-efficiency standards, and vehicle maintenance guidelines for fuel efficiency, will greatly enhance the ability of the County to achieve its reduction targets.

Some measures in the Transportation action area rely on changes to building use patterns and Countywide policies and are therefore closely related to measures in the Built Environment and Cross-Cutting action areas.

Alameda County Commitments to Climate Protection addressed in the Transportation action area:

12. Implement a comprehensive suite of green fleet policies and programs to promote efficiency, alternative fuels, and the infrastructure needed to promote alternative travel modes.
13. Shift 20% of County employees' commute trips from "drive alone" to other options by 2017 through advancing policies and programs that encourage alternative commute options and work arrangements.

GHG Reductions: In 2020, the measures that the County takes in the Transportation action area will **reduce predicted GHG levels by an estimated 10,183 metric ton CO_2e.**[99]

[98] Please note that this refers only to emissions from the County's vehicle fleet. Emissions and reductions from the use of personal vehicles for County business have not been formally quantified due to the difficulty of obtaining reliable data.

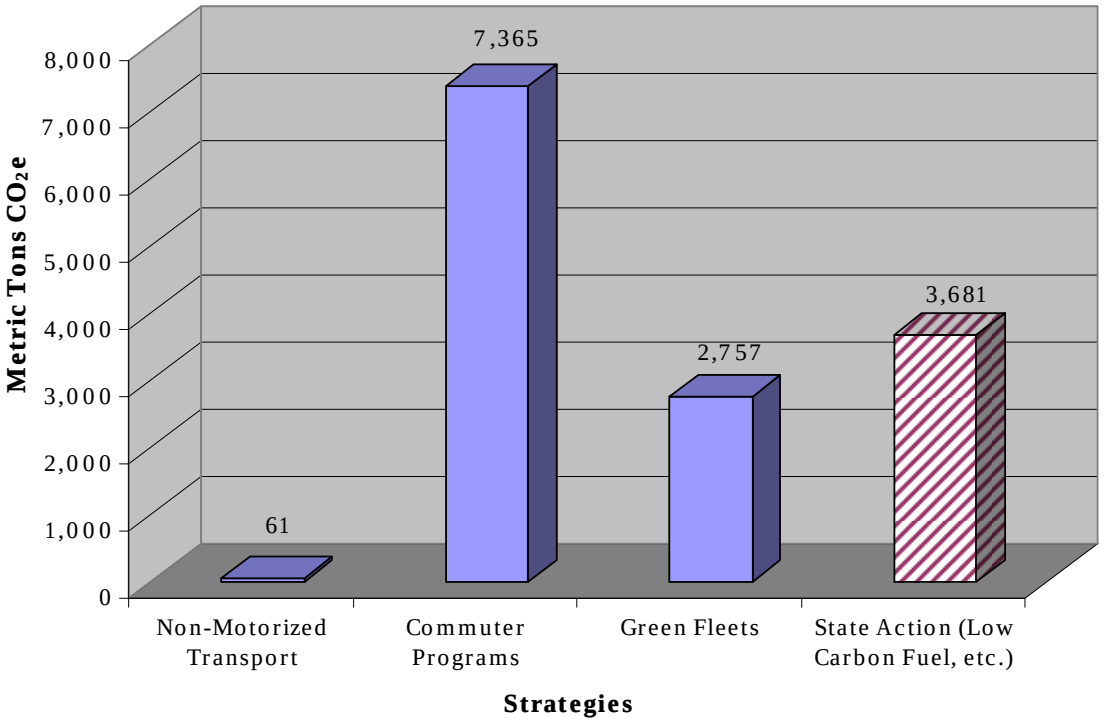
[99] Note: The GHG reductions do not include state-level or lifecycle reductions, but rather refer only to the direct reductions related to meeting the County's target. (See also the previous footnote on personal vehicle use.)

Figure 10 shows a more detailed breakdown of the GHG reductions from each strategy in this action area.

Monitoring and Reporting: Recommended monitoring and reporting includes (but is not limited to) establishing a systematic approach to:

- Surveying County employees about current commute modes and tracking ongoing commute trends;
- Tracking department/agency fleet vehicle use (mileage and fuel consumption) and costs; and
- Tracking mileage and reimbursement costs for the use of personal vehicles for County business.

FIGURE 10: GREENHOUSE GAS REDUCTION POTENTIAL, BY STRATEGY, IN THE TRANSPORTATION ACTION AREA



Note: Strategies indicated by the striped bars include significant local reductions that occur as a result of the efforts of other actors (i.e., state-level actions).

NON-MOTORIZED TRANSPORT STRATEGY

The mild climate that Alameda County experiences most of the year is conducive to non-motorized modes of travel such as walking and biking. These travel modes do not release any greenhouse gases and provide important opportunities for the County to reduce GHG emissions from commute trips and business travel. Walking and biking for shorter trips incorporates physical activity into daily life, in support of the County's Nutrition & Physical Activity Policy.[100]

[100] Adopted by the Board of Supervisors on October 27, 2009.

For longer trips, walking or biking can be used in conjunction with public transportation (e.g., BART, AC Transit) for low-emissions travel.

This strategy calls on the County to take steps to encourage non-motorized transportation for its employees and members of the public that visit County facilities to access services. The County should promote non-motorized transportation to its locations through actions such as:

- Providing instructions for reaching County facilities on bike, foot, or via public transportation;
- Increasing the number and visibility of bicycle racks and storage at County facilities; and
- Encouraging County employees, through information, equipment, infrastructure, and incentives to use non-motorized travel alternatives.

The County should also work with the communities in which its facilities are located to ensure the infrastructure exists to encourage pedestrian access and to create connections to the community bicycle network.

2020 GHG Reduction Potential: 61 metric tons CO_2e

Co-benefits: Health and fitness; Air pollution reduction

GHG Reduction Measures– Non-Motorized Transport Strategy

This section describes the measures that make up the Transportation action area – Non-Motorized Transport strategy. Table 13 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[101]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 13 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 13: GHG REDUCTION MEASURES – NON-MOTORIZED TRANSPORT STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
T-1	Promote bicycling and walking as alternatives to single-occupancy vehicle travel to and from County facilities	2nd			
T-2	Increase the infrastructure available to facilitate biking and walking as viable options for accessing County facilities	2nd			

[101] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

T-1 Promote bicycling and walking as alternatives to single-occupancy vehicle travel to and from County facilities

a. Provide outreach on the health benefits of walking and biking
b. Provide practical resources to encourage walking and biking (e.g., maps and routes, lists of local services, distances, and travel times between facilities)
c. Provide pre-tax commuter benefits for bicycle commuters as allowed by federal law

Background and Description: Walking, biking, skateboarding, and other human powered modes of transportation are viable, if often overlooked, options for commute and business trips made by County employees. These modes are most effective for trips less than one mile for walking, and less than three to five miles for biking. Many County facilities fall within this distance from one another or are sited within this distance of a major public transit stop.

This measure calls on the County to promote non-motorized modes of transportation to its employees. Employees should be provided with information about these transportation options. Outreach in this area should go beyond basic how-to's to focus on the personal and organizational co-benefits. For example, regular biking and walking improves health and fitness, yields cost savings when compared to vehicle use (e.g., fuel, parking, maintenance), and decreases stress levels, because time spent walking and biking tends to be more relaxing than fighting traffic and searching for parking.

Most importantly, this measure recommends providing the tools employees will need to switch to these new modes of transportation. This includes practical information like routes between facilities, safety tips, and the location of services that are accessible without a car during breaks and after work (e.g., restaurants, dry cleaners, stores). The County should also consider providing tangible incentives. For example, some organizations offer a pre-tax benefit of approximately $20 per month to employees who commute by bicycle to offset bicycle maintenance costs.[102]

This measure is closely related to measure T-2 (infrastructure for non-motorized transport), T-3 (education on commute alternatives), and T-4 (commuter benefits). It also supports the initiatives called for the County's Nutrition and Physical Activity policy.

Priority Tier: Second

[102] According to current tax law, employers have the option to provide bicycle maintenance benefits; however, these benefits cannot be deducted from an employee's pay pre-tax (as is the case for other pre-tax commuter benefits). Also, employees who accept this benefit are not eligible for other transit benefits. Federal legislation has been proposed to align the bicycle benefit with other pre-tax commuter benefits. More information from the San Francisco Bicycle Coalition is available at www.sfbike.org/commute.

T-2	**Increase the infrastructure available to facilitate biking and walking as viable options for accessing County facilities** a. Arrange for secure bicycle parking for employees at all County campuses or facilities b. Provide public bicycle parking at County facilities c. Create a bicycle fleet for use by County employees in lieu of County vehicles d. Consider options for making showers available in facilities or through local partnerships e. Partner with jurisdictions and agencies to ensure appropriate non-vehicular infrastructure exists to access County facilities (e.g., sidewalks, bike lanes, bus stops)

Background and Description: This measure is closely related to T-1 but deals with the physical elements needed to encourage non-motorized travel. At the most fundamental level, this entails the provision of adequate parking for bicycles at County facilities. Currently, County buildings offer few secure bicycle parking options. Providing racks and lockers is a relatively low-cost way to encourage, and provide a visible indication of the County's support for, non-motorized transport. The County should also work with jurisdictions in which its major campuses are located to ensure that these buildings are connected to the community's system of bikeways and that infrastructure is provided to promote walking (e.g., crosswalks and signals, traffic calming devices, sidewalks).

Many jurisdictions go beyond bike parking and have incorporated bicycles into their vehicle fleets. Bicycles in the fleet include both bicycles available for check-out and bicycles and even bike-trailers provided for employees to use in the course of their work (e.g., parks personnel, downtown law enforcement). Besides making bicycles available and promoting them to employees, these jurisdictions also provide the appropriate safety equipment (e.g., helmets, lights) and often offer safety training courses to their employees. A bicycle fleet should be made available at central locations and individual buildings in a similar manner to existing pool vehicles. This would provide a low-emissions alternative to checking out a vehicle for short trips and, when combined with public transit, reduce the need to use vehicles for longer trips.

Finally, in new construction and major remodel projects, the installation of facilities such as lockers and showers should be considered. These would not only be available for bike or walk commuters but would also be an amenity to promote physical activity at lunch time and before and after work (e.g., walking, jogging).

Priority Tier: Second

COMMUTER PROGRAMS STRATEGY

With almost 9,000 employees commuting to work daily, action to reduce vehicle miles traveled is essential to meeting the County's GHG emissions reduction targets. However, driving to work is the travel mode of choice of approximately 79% of County employees, a rate 10% higher than the regional average. Although employees have access to commuter benefits and transit alternatives, these benefits are undersubscribed. Telecommuting, compressed workweeks, and other flexible schedules and work arrangements are not widely offered.

Encouraging employees to shift from single-occupancy vehicles will require a number of approaches. As previously discussed (Cross-Cutting Strategies action area – Education and

Outreach strategy), simply providing information on commute alternatives will not be sufficient to encourage changes in personal habits. Measures in this strategy call on the County to increase the tools and benefits provided to encourage alternative commutes (e.g., ride matching, discount transit passes, shuttles to County facilities). Measures in this strategy also call for promoting the benefits of alternative commute modes to employees (e.g., cost savings, ability to sleep or work during the commute, getting to know co-workers).

The most efficient trip, however, is the one not taken. Therefore, the County should also look for ways to reduce the number of commute trips required by its employees. Many jurisdictions have had success with offering programs such as telecommuting and compressed work schedules. The length of commute trips can be decreased by creating remote work locations in offices around the County or even by partnering with other counties to share space. The County should also consider opportunities to adjust parking policies and take other steps to de-emphasize private vehicle use.

The County has already started on a number of these initiatives, such as piloting shuttles for downtown Oakland and the Juvenile Justice Center/Fairmont (San Leandro) area, launching a monthly commuter club, and developing relationships with local transit providers. The County should expand these efforts and initiate new programs. This strategy area is closely tied to the Technological Innovation and Communications strategy in the Cross-Cutting Strategies action area, which promotes the computing advances needed to promote flexible work arrangements.

2020 GHG Reduction Potential: 7,365 metric tons CO_2e

Co-benefits: Health and fitness; Interaction with other employees; Personal financial savings; Air pollution reductions

GHG Reduction Measures – Commuter Programs Strategy

This section strategy describes the measures that make up the Transportation action area – Commuter Programs strategy. Table 14 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[103]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 14 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

[103] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

Table 14: GHG Reduction Measures – Commuter Programs Strategy

#	Measure Name	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
T-3	Develop a comprehensive employee education and outreach strategy on commute alternatives	1st			
T-4	Expand employee commuter benefits programs	1st			
T-5	Implement and promote a comprehensive Countywide flexible work program to achieve 20% employee participation within five years	1st			
T-6	Develop and promote shuttles (or similar services) to connect major County facilities with transit systems	2nd			
T-7	Adjust parking policies to de-emphasize single-occupancy vehicle commutes	2nd			
T-8	Establish a Commute Trip Reduction Coordinator position to develop, monitor, and guide the implementation of a comprehensive commute trip reduction program	2nd			
T-9	Develop remote workspaces to facilitate interagency collaboration and minimize business and commute travel	3rd			
T-10	Initiate a standard compressed work week schedule (where appropriate) with full building shut-downs	3rd			
T-11	Develop a fee-based car-share program that allows personal use of County fleet vehicles for errands or carpooling	3rd			
T-12	Investigate opportunities for reducing employee commute distances	3rd			

T-3 Develop a comprehensive employee education and outreach strategy on commute alternatives

a. Provide comprehensive information on commute alternatives to all employees
b. Actively promote existing commuter benefits
c. Review current commuter benefits claims and reimbursement system for opportunities to improve and streamline

Background and Description: This measure is an extension of CC-1 (employee education and outreach) that focuses specifically on employee commutes and encouraging alternatives to the single-occupancy vehicle. The County will develop and deliver customer-friendly messages on commute choices that clearly present the benefits of alternative commute modes in a way that is tailored to the needs of Alameda County employees. These outreach efforts will outline the viable transportation alternatives and emphasize the positive benefits of alternative forms of

commuting, such as safety, cost savings, productivity, and health benefits. Outreach efforts will also include providing employees with the resources they need, such as maps and bus schedules, to make the choice to try an alternative to driving to work. Ideally, a Commute Trip Reduction Coordinator (see measure T-8) would provide personalized assistance to County employees exploring alternative commute options.

This program should also streamline the County's delivery of commuter benefits to employees and look for opportunities to leverage the resources of local non-profits and agencies that provide commute assistance. These resources include public outreach programs run by the nonprofit TransForm, commute consultants from regional transit partners (e.g., AC Transit, BART) who are available for County events, the East Bay Bike Coalition's bicycle safety workshops, and 511.org's route planning assistance.

This education and outreach strategy will be developed using the most current behavior change techniques targeting the underlying motivations, values, and beliefs that encourage single-occupancy vehicle commute trips (see discussion in Chapter 4, Cross-Cutting Strategies, Education and Outreach). Ideally, an outreach campaign would provide people with many opportunities to try alternative commute modes (e.g., offer free transit passes) and focus on achievable, incremental changes, such as encouraging an alternative travel mode one day a week (and increasing the frequency over time). It would also incorporate a system to track commuter rates and the effectiveness of any educational campaigns implemented. Such a tracking system could be linked to incentive programs that further increase the effectiveness of the messages being provided to employees.

Potential next step(s): Work with 511.org to survey employees to better understand trip needs, barriers to and incentives to moving out of single-occupancy vehicles, and segments of population most likely to shift to an alternative commute mode.

Priority Tier: First

T-4	**Expand employee commuter benefits programs** a. Establish a carpool matching service for County employees b. Coordinate with transit providers to provide employees with discount transit passes c. Investigate and provide additional incentives to encourage using transit, biking, walking, and carpooling

Background and Description: Providing employees with benefits and incentives to encourage the use of less carbon-intensive commute modes is an effective mechanism to encourage alternatives to single-occupancy vehicle commuting. These include items such as ride-matching services and subsidies for transit, ridesharing, and non-motorized commute modes. These types of incentives are often provided as an alternative to free or subsidized parking and therefore are closely tied to measure T-7 (adjusting parking policies).

Many examples of the impact of this type of program can be found nationally and locally. The Alameda County Congestion Management Program piloted an incentive program with four employers which concluded that financial benefits (subsidized transit passes and other rebates)

of $1.50 to $2.50 per day can reduce automobile commute trips by 16 to 20%.[104] Research on the Bay Area Commuter Check program indicates that the program increases alternative commute rates by as much as 48%, and the employees of one business surveyed, Chronicle Books, listed their commuter benefits as the second most valued employer-based benefit – immediately behind health insurance.[105]

County efforts should begin with better promotion of the existing pre-tax and other benefits programs for commuters. In 2009, the County's Human Resource Services Agency reported that less than 5% of County employees are participating in the program,[106] and the Alameda County Guaranteed Ride Home Program reported that less than 2% of County employees were enrolled.[107] In contrast, 16% of respondents to an employee commuter survey of the County campus in Hayward responded that financial incentives would encourage them to try an alternative commute mode. Similarly, when the Agency Climate Coordinators were interviewed, most mentioned that the County should offer some type of pre-tax or subsidized transit benefit, suggesting that awareness of the existing benefit is limited.

Another type of incentive that the County should consider offering is the subsidy for non-motorized travel mentioned in measure T-1 (promoting bicycling and walking). The County can also work with local transit providers to provide discount transit passes. AC Transit has indicated a willingness to offer a discount to the County for bulk purchases of passes. Additionally, a County supported ride-matching system and subsidized vanpools for County employees would further encourage new commute patterns.

Priority Tier: First

Potential next step(s): Contact transit providers and other commute agencies to determine what benefits are already available. Begin a program to actively promote the current pre-tax transit benefits.

T-5 Implement and promote a comprehensive Countywide flexible work program to achieve 20% employee participation within five years

a. Develop standardized telecommute, compressed work week, and flextime policies and implementation guidance
b. Create guidelines for assessing positions' suitability and performance expectations for participating in flexible work arrangements
c. Provide training for managers and supervisors on performance-based staff management in a flexible work environment

Background and Description: The most efficient trip is the one that does not get taken. Flexible work arrangements, such as telecommuting, compressed work weeks, and flexible start times, have gained acceptance in many private sector industries and are being used in many governments around the country. Governments that have active programs have shown that a

[104] Victoria Transport Policy Institute. *Commuter Financial Incentives: Parking Cash Out, Travel Allowance, Transit and Rideshare Benefits*, Transportation Demand Management Encyclopedia, www.vtpi.org/tdm/tdm8.htm (accessed April 7, 2010).
[105] Ibid.
[106] Nakamura, Lilybell, Climate Coordinator for Human Resource Services Agency, Personal e-mail, April 28, 2009.
[107] Flynn, Jeff, Program Administrator for Alameda County Guaranteed Ride Home Program, Personal e-mail, June 29, 2009.

20% participation rate is achievable.[108] The success of this measure is closely tied to the Technological Innovation and Communications strategy in the Cross-Cutting Strategies action area since some potential work arrangements will require technological support (laptops, call forwarding, remote access to networks) and security.

A robust telecommuting program allows employees to conduct their regular work from a home office (or other remote location). Some notable successes in promoting telecommuting and other flexible work arrangements include the State of Arizona, Hennepin County, the federal government, and even some Alameda County agencies.[109] Within the County, the Social Services Agency is already piloting a version of the remote office in which certain employees are based in the field, not in offices.

Offering telecommuting does require a new way of looking at County operations. This includes emphasizing employees' performance and completion of work products over their being present at the office for a specified period of time. It will also be important to review job classifications to determine which positions are appropriate to take part in a telework system, as there will be some types of positions that will not be able to complete their work from a remote location much of the time.

Similarly, compressed work weeks avoid commute trips by allowing employees to work longer days when in the office in exchange for taking some days off. The most common versions are 10-hour days, four days a week, and the 9/80 schedule (working 80 hours over nine days with every other Friday off). Compressed work weeks are used by government agencies such as the Bay Area Air Quality Management District, City of Olympia, Washington, the State of Utah, and many others. Departments could apply a standard schedule with common days off for a group or a staggered schedule with different days off to ensure staff coverage for daily tasks.

Finally, this measure recommends that the County allow flexibility in start times. This will not avoid a commute trip but will help employees take public transit by giving them the option to avoid the crowding and delays often experienced during rush hour. It will also allow employees more flexibility in designing a work schedule that fits better with their individual circumstances and transit schedules (as buses and trains do not always arrive at County facilities precisely at current shift start times). As with the compressed work week, there will need to be careful scheduling in many departments to ensure that services are covered during business hours.

Besides reducing GHG emissions, these types of flexible work arrangements provide a number of additional benefits to the County. A workforce that is set up to work remotely is also prepared to continue providing services in case of a natural disaster or other disruption that makes reaching the office problematic. Discussions with County employees indicate that most would like to have access to these types of flexible work arrangements; therefore, expanding these programs will provide a boost to employee morale. Studies show that employees with flexible arrangements tend to be more productive since they are not strictly tied to working an eight hour day and tend to work during some of the time they previously spent commuting.[110] Flexible schedules are also seen as a desirable benefit to attract and retain employees. In fact, "among the '2008 Fortune Best Companies to Work For' list, 84% had a telework program. The list

[108] More information on Telework Arizona is available at www.teleworkarizona.com/mainfiles/visitor/voverview.htm; "Hennepin employees try new work model," *Star Tribune*, September 5, 2009, www.startribune.com/politics/state/57454512.html (accessed April 7, 2010), and many others.
[109] Ibid.
[110] Sun Microsystems Open Work Services Group, "Top 10 Myths About Mobile Work," white paper, August 2008.

included companies from a broad range of industries such as construction, energy, finance, healthcare, hospitality, insurance, law, manufacturing, retail, and technology."[111]

Priority Tier: First

Potential next step(s): Revisit the County's existing telework policy and convene a task force to discuss ways to implement flexible work arrangements more widely within the County.

T-6 Develop and promote shuttles (or similar services) to connect major County facilities with transit systems

a. Assess the opportunity to offer shuttles to County campuses (e.g., JJC and Fairmont, Hayward, downtown Oakland, Santa Rita Jail)
b. Explore opportunities to partner with transit providers to expand services to County facilities

Background and Description: The County has a number of campuses that are relatively close to BART stations and other public transportation hubs but are still far enough away to make walking or biking the final stretch to the County buildings difficult. In these locations, the County should consider operating a shuttle service from BART stations to allow employees to take public transit to and from work and to travel to business meetings.

Factors to keep in mind when considering new shuttle services include whether:

- The locations have a large enough employee population base to justify the expense;
- A fee should be charged to offset the costs;
- Existing bus routes run with enough frequency to adequately serve the facility;
- A shuttle route can incorporate multiple facilities or common lunch or break time destinations (e.g., a downtown area with stores and restaurants) to encourage public transit use for business meetings and errands; and
- The public will be able to use the shuttle service to access County services, thereby reducing additional vehicle trips while increasing accessibility.

The County offers several shuttles that have proven very successful (Highland Hospital and downtown Oakland) and has recently launched a JJC/Fairmont shuttle in San Leandro. Grants to launch similar programs are available from the Bay Area Air Quality Management District and other sources.

Priority Tier: Second

T-7 Adjust parking policies to de-emphasize single-occupancy vehicle commutes

a. Offer preferential parking for carpools, vanpools, and alternative fuel and high-efficiency vehicles at all facilities
b. Institute parking fees for all public and employee parking provided at County facilities
c. Revise the pre-tax parking benefit to emphasize parking at transit facilities

Background and Description: The County should conduct a comprehensive review of its parking policies and where they fit into the County's overall commute trip reduction strategy.

[111] Sun Microsystems Open Work Services Group, "Top 10 Myths About Mobile Work," white paper, August 2008.

Free and below market rate parking amounts to a benefit to single-occupancy vehicle commuters that does not exist for other types of commuters. A Metropolitan Transportation Commission study and experiences from other jurisdictions show that moving away from free or subsidized parking will decrease drive alone rates.[112]

At the same time, a revised parking policy will also promote more sustainable commute patterns. Free and reserved parking for carpools, vanpools, and even highly efficient vehicles in desirable locations provide an incentive for using these commute modes. Promoting the use of current pre-tax parking benefits to pay for parking at transit locations as opposed to at the workplace will encourage transit use by employees who do not live within walking distance of transit. Finally, parking fees can be used to provide a source of funding for other commuter incentives so that the benefits of these fees are returned to County employees.

Priority Tier: Second

T-8 Establish a Commute Trip Reduction Coordinator position to develop, monitor, and guide the implementation of a comprehensive commute trip reduction program

Background and Description: Launching and maintaining a comprehensive commute trip reduction program requires significant effort. This includes managing internal programs, developing and providing informational materials, assisting employees, and coordinating with regional programs and outside partners. These duties can most effectively be fulfilled by a dedicated Commute Trip Reduction Coordinator (or similar position). This type of position is becoming increasingly common in large businesses and local governments and in fact is required in Washington State and other areas.[113]

Priority Tier: Second

T-9 Develop remote workspaces to facilitate interagency collaboration and minimize business and commute travel

a. Provide open workspaces with phones and computers for County employees to use at other County agencies' offices
b. Develop relationships with neighboring counties and other jurisdictions to offer remote workspaces for employees

Background and Description: County facilities are spread out throughout the County and frequent meetings are necessary between employees located in different offices. If the County had open workspaces in its facilities available for employee use, it would be possible to further decrease the County's transportation-related GHG emissions. For example, employees who visit other facilities for a meeting could finish out the workday at that facility and not have to travel back to their office. Employees who work close to a facility other than their office could have an option to work remotely at times, but in a County building. In the past, the County has even had reciprocal relationships with neighboring counties to provide space for each other's employees

[112] Metropolitan Transportation Commission, "Reforming Parking Policies To Support Smart Growth Toolbox/Handbook: Parking Best Practices & Strategies for Supporting Transit Oriented Development in the San Francisco Bay Area," report, June 2007.
[113] Washington State, Department of Transportation, Transportation Demand Management Program, www.wsdot.wa.gov/TDM/ (accessed April 7, 2010).

to decrease travel. This type of arrangement would also strengthen relationships between County departments and increase productivity by decreasing travel times.

Priority Tier: Third

T-10 Initiate a standard compressed work week schedule (where appropriate) with full building shut-downs

Background and Description: This measure is an extension of providing flexible work arrangements (T-5). As noted above, compressed work weeks avoid commute trips by allowing employees to work longer days when in the office in exchange for taking some days off. The most common versions are the 4/10 schedule (10-hour days, four days a week) and the 9/80 schedule (working 80 hours over nine days with a day off every other week). This measure would make a compressed work week standard for most employees (where appropriate) and allow County facilities to close on the days when employees were "off." Moving to a standard compressed work week schedule would provide greater public access to County services most days (e.g., keeping County offices open 8 am to 6 pm rather than 9 am to 5 pm) though non-essential County facilities would be closed one day every other week. Having a majority of County employees adopt the same compressed schedule reduces not only commute-related emissions but also electricity and natural gas emissions because buildings can be shut down. In this way this measure is also closely tied to the Energy Efficiency and Conservation strategy in the Built Environment action area.

Standard compressed work schedules with full building shut downs are becoming more common. They have been implemented by the Bay Area Air Quality Management District and by the State of Utah.[114] Response has been positive from the public, who are able to access government services after normal work hours, and employees, who appreciate an additional day for errands and spending time with family. To be effective, this schedule will have to be widely publicized so residents who utilize County services are aware of the new standard operating hours and days that facilities will be closed.

As in the flexible work arrangements measure (T-5), there will be certain job classifications that this would not apply to, as some County services (e.g., public safety, fire protection) must be offered seven days a week. Maximizing the benefits from this type of program will require the County to take steps to ensure that employees who can and cannot participate in a compressed schedule are located together. This will allow buildings to be fully shut down on the "off" days. Partially-occupied buildings cannot capture the energy savings of a full building shut down because central heating and ventilation systems will need to be operated for the entire building.

Priority Tier: Third

T-11 Develop a fee-based car-share program that allows personal use of County fleet vehicles for errands or carpooling

Background and Description: This measure supports employees using alternative commute options. Employees sometimes have days when errands and appointments that require a car must be completed during the workday (e.g., medical appointments). The County could make fleet vehicles available to employees for a nominal fee, or contract with private car-share service

[114] National Public Radio, "Utah Finds Surprising Benefits In 4-Day Workweek," April 10, 2009, www.npr.org/templates/story/story.php?storyId=102938615 (accessed April 7, 2010).

to provide vehicles that could be used for either County or personal business. This would allow employees to use alternative travel modes (e.g., transit, carpool) and still have access to a vehicle for essential errands. The City of Berkeley has implemented a car-share program: the City retired some fleet vehicles and replaced them with City CarShare vehicles, which are exclusively available to city staff during business hours and are available for public use after hours.

Priority Tier: Third

T-12 Investigate opportunities for reducing employee commute distances

a. Consider home location when assigning office location
b. Research possibilities to make incentives available to minimize vehicle travel between home and work

Background and Description: While the other measures in the Commuter Programs strategy have focused on how employees commute to work, this measure looks at the distance employees have to travel between home and work. The opportunities presented in this measure would have to be more fully analyzed before any decision is made about if, or how, to proceed.

One opportunity for the County to influence this distance is to consider an employee's home location in decisions about where their office will be located. Many agencies have offices and facilities throughout the County, and in some cases there is flexibility in where an employee is physically located. Another option used by a few jurisdictions with high costs of living is to work with lenders to offer incentives such as location-efficient mortgages to employees. These types of mortgages incentivize living closer to work by providing more favorable interest rates to borrowers with shorter commute distances and lower commute related costs.

Priority Tier: Third

GREEN FLEETS STRATEGY

For a number of years, the County has had an active program for high efficiency and alternative fuel vehicles and is beginning to look more holistically at how County employees move around and interact during their workdays (e.g., in-person meetings vs. teleconferences, assigned vs. pool vehicles, vehicle use vs. public transportation). The County's fleet contains a number of hybrid, electric, and natural gas vehicles as well as cars and trucks powered on waste vegetable oil. Almost all diesel vehicles operate on blend of 20% biodiesel. The County is constantly exploring new opportunities to reduce vehicle fuel use and pilot new, cutting-edge, technologies.

This strategy calls on the County to continue these efforts and explore opportunities to reduce vehicle use overall and increase the efficiency and performance of the vehicles that are used. This will require a renewed emphasis on purchasing alternative fuel and high efficiency vehicles that produce less GHG emissions. It will take policies, procedures, and technologies that increase the efficiency of the current fleet (e.g., anti-idling, routing and fleet management, maintenance). It will also require an assessment of how personal vehicles fit into the County's fleet management practices. Finally, it will rely on individual behavior changes – from driving practices to decisions about whether or not a vehicle (or trip) is needed.

2020 GHG Reduction Potential: 2,757 metric tons CO_2e

Co-benefits: Cost savings; Fleet efficiencies; Air pollutant reduction

GHG Reduction Measures – Green Fleets Strategy

This section describes the measures that make up the Transportation action area – Green Fleets strategy. Table 15 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[115]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 15 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 15: GHG REDUCTION MEASURES – GREEN FLEETS STRATEGY

#	Measure Name	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
T-13	Adopt fleet management policies and standards that promote efficiencies and minimize transportation-related emissions	1st			
T-14	Implement advanced fleet management technologies to measure and improve fleet efficiency	1st			
T-15	Promote alternative travel modes for business travel	1st			
T-16	Expand the use of high-efficiency and alternative fuel vehicles in all County fleets	1st			
T-17	Adopt operational and maintenance best practices to promote vehicle efficiency (e.g., tire inflation, low-friction engine oil)	2nd			
T-18	Expand and enforce anti-idling policies on all County vehicles	3rd			
T-19	Integrate information on the costs and fuel use associated with using personal vehicles for County business into transportation-related decisions	3rd			
T-20	Develop enhanced driver training classes on safety, efficient driving, and alternative fuel vehicles	3rd			

[115] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

T-13 Adopt fleet management policies and standards that promote efficiencies and minimize transportation-related emissions

a. Determine the most appropriately sized vehicles to purchase for the intended use
b. Purchase the most efficient vehicles within the necessary vehicle size classes
c. Investigate opportunities to limit growth in the number of fleet vehicles and retire underutilized fleet vehicles
d. Ensure that older and less-efficient vehicles are phased out of the fleet

Background and Description: The County can significantly reduce the GHG emissions from its fleet through simple steps to ensure that the right-sized, most-efficient, vehicle is purchased for the job. This does not mean that the County should adopt a one-size-fits-all approach to vehicle purchasing, since vehicles are needed for different types of tasks. Rather, when new vehicles are desired, the County should undertake an evaluation process to assess:

- Whether a dedicated vehicle is needed or a shared pool vehicle can be used;
- The size of vehicle needed, purchasing the smallest vehicle that will fulfill the needs; and
- The most fuel-efficient option within that size class: the County should, by default, purchase vehicles whose efficiency is in the top 10% of their size class.

Additionally, when replacing vehicles, the County should look at the makeup of the entire fleet and ensure that the oldest, least-efficient vehicles are retired or replaced first.

Purchasing efficient vehicles will reduce fuel costs. Sharing vehicles, whenever possible, as opposed to purchasing dedicated vehicles, will decrease the total number of vehicles needed in the County fleet (also see measure T-14 for another approach to reducing the number for vehicles needed). In this way, the County can save money, improve the overall efficiency of its operations, and reduce emissions.

Priority Tier: First

Potential next step(s): Develop a formal Green Fleets policy.

T-14 Implement advanced fleet management technologies to measure and improve fleet efficiency

a. Establish decentralized vehicle pools at County facilities and online reservation systems to improve the efficiency of vehicle usage and minimize the fleet size
b. Utilize Global Positioning System (GPS) technology and route efficiency software to minimize fuel use

Background and Description: There a number of technologies that increase the efficiency of the fleet and fleet management. Many are under investigation by the Transportation Services Division of the General Services Agency.

These technologies include systems for online fleet reservations. This not only gives employees easier access to vehicles, it also provides a more detailed reservation system allowing one vehicle to be used multiple times per day. When Public Works instituted this system for its fleet, it was able to reduce the overall fleet size by seven vehicles. This saves money that can be used to fund additional efficiency measures.

Similarly, the emergence of global positioning technologies has decreased fuel use in other jurisdictions and businesses (e.g., Sonoma County) by as much as 30%. These systems provide

real-time information on a vehicle's location and condition. This allows for more efficient routing of vehicles, minimizes extraneous vehicle travel, and provides data to analyze fleet efficiency. The systems also provide safety benefits in that they have the ability to identify and notify fleet managers of maintenance issues or if an accident occurs.

Priority Tier: First

Potential next step(s): Conduct a pilot of new fleet management technologies.

T-15 Promote alternative travel modes for business travel

a. Make transit passes available to employees for use on work trips
b. Review County policies to ensure easy reimbursement procedures for employees who use public transportation for County business
c. Emphasize rail as an option for regional travel (e.g., to Sacramento)

Background and Description: Alternative travel modes are a viable option for many business trips. Many County facilities are accessible by public transit. Longer trips, to Sacramento and other destinations, can be taken by train. When employees use public transit instead of a fleet vehicle or reimbursement for personal vehicle use, there can be cost savings to the County. Public transit use can also increase productivity if employees use transit time normally spent driving doing work.

The County should promote transit use for employees and look at ways to simplify and streamline the reimbursement process to avoid the perception that completing the reimbursement forms is too time consuming and complicated. With the release of the TransLink/Clipper smart cards that work on most Bay Area transit systems, departments have the ability to check out cards to employees instead of vehicles and eliminate the need for personal reimbursements.[116]

Priority Tier: First

Potential next step(s): Integrate transit use for business travel into outreach campaigns about transportation alternatives. Develop systems for checking out TransLink/Clipper cards to employees.

T-16 Expand the use of high-efficiency and alternative fuel vehicles in all County fleets

a. Purchase hybrids or equally efficient vehicles for pool vehicles
b. Expand the use of alternative fuels as appropriate (e.g., compressed natural gas, biodiesel blends like B50)
c. Integrate electric and plug-in hybrid vehicles into County fleets and expand opportunities for electric vehicle recharging at County facilities
d. Utilize non-motorized and electric vehicles for specialized applications and intra-campus travel
e. Continue to pilot the use of clean fuel and advanced technology vehicles
f. Investigate low-emission options (e.g., fuels, technologies) for heavy duty and off-road vehicles

[116] Currently known as TransLink cards, these transit passes will be renamed Clipper cards in June 2010.

Background and Description: The County has been a leader in purchasing high-efficiency vehicles such as hybrids and other high mile-per-gallon vehicles; the County has also tested the use of number of alternative fuel vehicles such as waste-vegetable-oil powered, compressed natural gas, and biodiesel. The County should continue to increase the share of these vehicles in its fleet. This includes expanding the use of existing technologies, such as hybrid-electric vehicles; increasing the amounts of alternative fuels used (e.g., moving from the current 20% biodiesel blend to a 50% blend); and looking at new fuel types. New technologies that could make up a significant portion of the fleet by 2020 include plug-in hybrid vehicles, all-electric vehicles, and hybrid-electric technologies for heavy duty vehicles. Some of these technologies will require infrastructure developments as well (e.g., new fueling stations or electric-vehicle charging stations).

Priority Tier: First

Potential next step(s): Consider purchasing alternative fuel or high-efficiency vehicles whenever new vehicles are needed; Continue to explore grant opportunities for advanced technology vehicles.

T-17 Adopt operational and maintenance best practices to promote vehicle efficiency (e.g., tire inflation, low-friction engine oil)

Background and Description: A number of best practices identified by the State in its climate protection Scoping Plan will increase the fuel efficiency of existing vehicles. These include the use of low-friction engine oil (which increases the efficiency of engine operations), as well as using low-resistance tires and ensuring that tires are inflated properly (which decreases the power needed to propel the vehicle). Adopting these standards into County fleet operations could reduce fuel use and emissions by close to 5%.[117]

Priority Tier: Second

T-18 Expand and enforce anti-idling policies on all County vehicles

Background and Description: Idling vehicles use fuel and produce GHG emissions without providing any transportation benefits. The County already has an anti-idling policy for diesel vehicles and should consider expanding this policy to include drivers of gasoline powered vehicles. In general, a vehicle uses the same amount of fuel in 10 seconds of idling as it does to restart; therefore, idling for longer periods of time wastes fuel unnecessarily.[118]

Some County vehicles need power to run other essential operations, such as computers and equipment used in law enforcement vehicles, or equipment used in Public Works and Building Maintenance vehicles. For these vehicles, the County should consider hybrid technologies that provide electrical power without running the gasoline power engine or on-board generators or battery packs that provide the auxiliary power needed.

Priority Tier: Third

[117] Efficiency improvements for all of the vehicle efficiency measures are derived from the State of California's AB32 Scoping Plan, Volume II, Appendix I.
[118] State of Utah, Idle Free Utah Campaign. "Idling Facts," www.idlefree.utah.gov/idling_facts.htm (accessed April 7, 2010).

T-19 Integrate information on the costs and fuel use associated with using personal vehicles for County business into transportation-related decisions

Background and Description: The County does not currently track the amount spent on reimbursements for the use of personal vehicles on the job. Anecdotal information from interviews with the Agency Climate Coordinators indicates that this could be a significant amount of the vehicle use for County business. Currently, this is not included in the County's GHG emissions inventory nor accounted for in financial decisions about fleet operations. Best practices have shown that, if an agency, department, or group is using a vehicle for more than 6,000 miles per year, it is cheaper to use a fleet vehicle than to provide reimbursements for personal vehicles at the standard federal rate. Additionally, as the County tends to use highly efficient vehicles in its fleet, the GHG emissions produced will tend to be less than those from the average employee's personal vehicle.

This measure calls on the County to track personal vehicle use to gain a better understanding of the environmental and financial costs of this practice. Once the basic data are available, the County can make informed decisions about how to best maximize its investments in transportation services.

Priority Tier: Third

T-20 Develop enhanced driver training classes on safety, efficient driving, and alternative fuel vehicles

Background and Description: Simple changes to driving practices have a large impact on a vehicle's fuel use. These practices include avoiding sudden stops and rapid acceleration, as well as driving at moderate speeds (e.g., driving 55 mph as opposed to 65 mph uses 20% less fuel). Research shows that attending a class on efficient driving practices leads to lasting reductions in fuel use by the attendees. The County could offer such a course, in conjunction with its current safe driver classes, to create a number of beneficial changes in driving habits. Some jurisdictions have gone even farther. For example Polk County, Florida, has combined a drivers' training class with an incentive program through which the savings in fuel costs are split between the County and the employee driver.[119]

Priority Tier: Third

STATE-LEVEL ADVOCACY

The State of California's climate action plan (the Scoping Plan) also focuses on reducing GHG emissions from vehicles. It identifies a number of actions that, if adopted, will significantly reduce commute trip and fleet emissions without the need for the County to make changes in its operations. Given their importance, the County should follow the development of these regulations and take steps to ensure they are implemented statewide.

[119] "Bright Ideas: Fuel Management," *Government Fleet*, Feature, July 2009. www.government-fleet.com/Channel/Fuel-Management/Article/Story/2009/07/Bright-Ideas-Fuel-Management/Page/2.aspx (accessed April 7, 2010).

First and foremost is the State's call for the development of a low-carbon fuel standard that will reduce GHG emissions from transportation-related fuels by 10%. The County already exceeds this standard in its diesel powered vehicle fleet, which operates on a blend of 20% biodiesel. However, adjusting the type of fuel sold in the state will greatly reduce GHG emissions from the County's gasoline powered vehicles and will have a significant impact on GHG emissions from commute trips made in personal vehicles.

The State is also looking into instituting requirements for new vehicles to utilize reflective paint and glass that absorbs less heat from the sun in order to decrease power requirements for operating the air conditioning systems. This will increase the fuel efficiency of new vehicles and, as older vehicles are retired in favor of new, decrease overall transportation-related emissions.

Finally, it should be noted that the impact of new federal and State standards to increase the fuel efficiency of new vehicles have not been factored into this action area. These include increases to the federal Corporation Average Fuel Economy (CAFE) standard and State Assembly Bill 1493 (Pavley) regulations on vehicles' GHG emissions. Although these regulations will reduce GHG emissions, they do not go into effect until midway through the implementation period for the Climate Action Plan, and their impact will vary based on the rate with which new vehicles are purchased. Therefore their impact has not been included in State Action bar on the chart in Figure 10, nor are they included in the CO_2e reductions reported below; however, over time, these regulations may greatly increase emissions reductions.

2020 GHG Reduction Potential: 3,681 metric tons CO_2e

Legislative action item: Track and support the State's low-carbon fuel, maintenance, and other vehicle-efficiency standards.

CHAPTER 7: SOLID WASTE ACTION AREA

The Solid Waste action area contains strategies and measures aimed at reducing greenhouse gas (GHG) emissions associated with the waste generated by County operations and the provision of County services. These measures support the County's 2008 waste reduction resolution (R-2008-213), which directs the General Service Agency "in cooperation with all employees and agencies" to develop strategies to divert at least 75% of the waste generated by County operations from going to the landfill.[120] The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) recommends going one step further and calls for the County to work towards becoming a zero waste operation by 2020.

The Solid Waste action area includes two strategies for achieving emissions reductions. These strategies include promoting **waste prevention and diversion** opportunities at County facilities and specifically targeting **paper reduction,** as paper waste makes up close to half of the non-construction-related material the County sends to landfills every year.

The strategies in the Solid Waste action area rely on the traditional waste reduction hierarchy of reduce, reuse, and recycle, with the addition of composting as another viable alternative to sending material to a landfill. Waste prevention and diversion both reduces GHG emissions and extends the life of local landfills, which will save taxpayer money in the long run.

Measures in the solid waste action area aim to reduce emissions that result from the decomposition of organic matter sent to landfills. When organic materials, such as food scraps and paper products, are buried in a landfill, there is limited oxygen available during decomposition. Under these conditions, the waste material releases methane as opposed to carbon dioxide (the normal by-product of decomposition). Methane is a powerful greenhouse gas, 21 times more effective than carbon dioxide at trapping heat and driving climate change.[121]

Measures in this action area also address lifecycle emissions reductions associated with the County's waste reduction and management efforts to the extent that these reductions could be calculated. Taking a lifecycle approach incorporates the upstream and downstream emissions associated with the mining, processing, transport, and disposal of products. This provides insight into the full environmental impact of decisions about waste disposal. For example, recycling a soda can instead of sending it to the landfill allows the aluminum to be used again. Although aluminum recycling does not reduce landfill emissions, as aluminum is not organic matter and does not decay, it does decrease the need to use virgin materials in the manufacturing process and minimizes the upstream emissions associated with the mining, processing, and transport of raw materials.[122]

Unfortunately, not all materials can easily be reused, recycled, or composted, which presents a barrier to achieving a zero waste goal. Therefore, the strategies presented here are closely linked to the Sustainable Purchasing strategy in the Cross-Cutting action area of the Plan. Considering

[120] Alameda County Resolution 2008-213.
[121] More recent assessments of methane's effect on global warming indicate that it's impact closer to 25 times that of carbon dioxide. However, a factor of 21 is still commonly used in the United States and by the U.S. EPA for GHG analysis.
[122] Lifecycle emissions reductions are rough estimates as the calculations are much more complex than for direct reductions. Note that lifecycle reductions are provided as information only and were not included as part of the emissions reduction target.

the disposal options available for different products prior to their purchase (and favoring those that lend themselves to reuse, recycling, or composting) is an important component of waste reduction.

Alameda County Commitments to Climate Protection addressed in the Solid Waste action area:

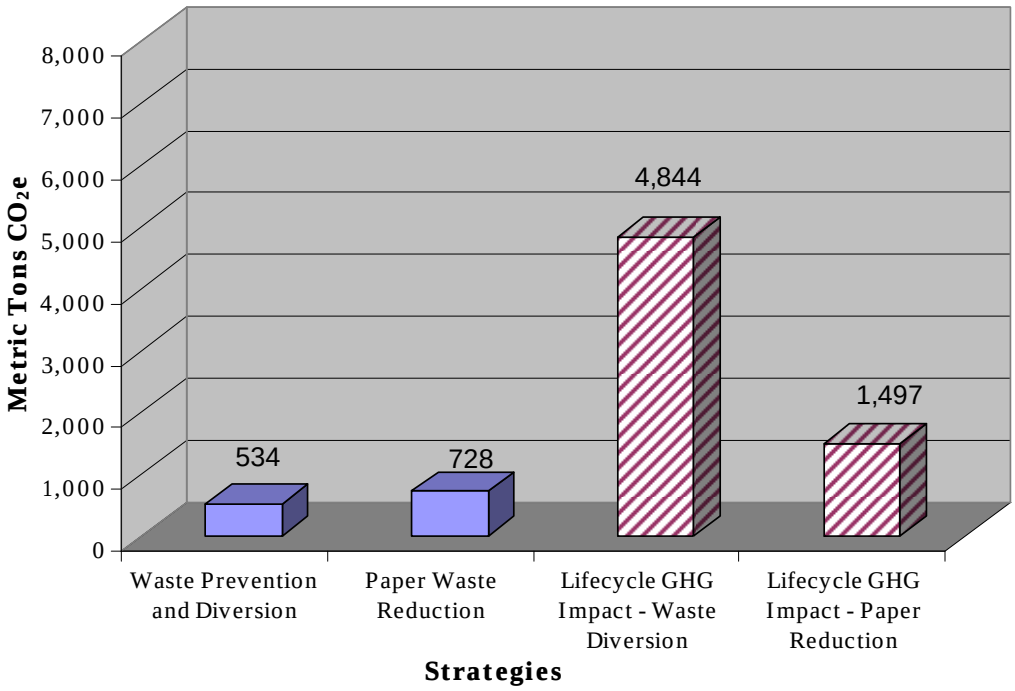
14. Meet the County's 75% waste reduction goal, and develop an implementation and outreach plan that strives to achieve zero waste at County facilities by 2020 through paper reduction, waste prevention, and waste diversion programs.

GHG Reductions: In 2020, the measures that the County takes in the Solid Waste action area will **reduce predicted GHG levels by an estimated 1,262 metric ton CO_2e.**[123] Figure 11 shows a more detailed breakdown of the GHG reductions from each strategy in this action area.

Monitoring and Reporting: Recommended monitoring and reporting includes (but is not limited to) establishing a systematic approach to:

- Conducting regular waste audits of County facilities;
- Tracking waste generation and diversion rates; and
- Tracking and reporting agency-specific paper usage and cost annually.

FIGURE 11: GREENHOUSE GAS REDUCTION POTENTIAL, BY STRATEGY, IN THE SOLID WASTE ACTION AREA



Note: Strategies indicated by the striped bars include significant reductions that occur outside of the scope of the County's greenhouse gas emissions inventory (i.e., lifecycle emissions from manufacturing and transporting goods the County purchases).

[123] These GHG reductions do not include state-level or lifecycle reductions, but rather refer only to the emissions reductions at the landfill related to meeting the County's target.

WASTE PREVENTION AND DIVERSION STRATEGY

Achieving zero waste requires an emphasis on waste prevention as well as on creating systems in which material are continually reused, recycled or composted, or otherwise put to new uses instead of being sent to a landfill.[124] This strategy is aimed at expanding the County's waste reduction programs, engaging employees in the zero waste effort, and identifying new ways to reduce the amount of waste being generated. These measures, in conjunction with a sustainable purchasing policy, move the County closer to meeting the goal of zero waste and also contribute to building markets for reused and recycled goods.

This strategy builds on the County's successful programs for recycling paper, bottles and cans, batteries, and toner cartages. The Property and Salvage department also collects other items generated in quantity and arranges for the reuse of many County materials, such as furniture, cubicles, electronics, and other supplies. The measures included here increase the effectiveness of these programs, expand their reach, and incorporate new programs to address materials still going to landfills in significant quantities.

2020 GHG Reduction Potential: 534 metric tons CO_2e (plus an additional 4,844 metric tons CO_2e in lifecycle reductions)[125]

Co-benefits: Natural resource conservation; Cost savings

GHG Reduction Measures – Waste Prevention and Diversion Strategy

This section describes the measures that make up the Solid Waste action area – Waste Prevention and Diversion strategy. Table 16 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[126]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 16 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

[124] More information on the concept of zero waste is available at www.zerowaste.org.
[125] Lifecycle emissions reductions are in addition to the GHG emissions reduced at the landfill. They are primarily related to upstream emissions. Lifecycle emissions reductions are provided as information only and were not included as part of the emissions reduction target.
[126] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

TABLE 16: GHG REDUCTION MEASURES – WASTE PREVENTION AND DIVERSION STRATEGY

#	Measure Name	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
SW-1	Expand programs to divert waste generated at County facilities from landfills	1st			
SW-2	Develop and monitor construction and demolition waste plans for all construction projects	1st			
SW-3	Continue to investigate and implement actions to reduce waste generation at detention facilities (e.g., waste sort, recycling, eliminating single-use items)	2nd			
SW-4	Increase efforts to prevent waste from being generated at County facilities	2nd			
SW-5	Continue and expand the use, reuse, and recycling of materials generated or collected from County-maintained right-of-ways and public spaces	3rd			
SW-6	Evaluate opportunities in the County's materials reuse programs to maximize waste diversion and minimize waste generation	3rd			
SW-7	Advance programs that increase employee participation in the County's waste reduction and diversion efforts	3rd			

SW-1 Expand programs to divert waste generated at County facilities from landfills

a. Provide comprehensive recycling services
b. Integrate composting (e.g., food scraps, green waste, other organic materials) into County waste diversion programs
c. Increase recycling in public areas at County facilities
d. Work with landlords to provide recycling and composting at leased facilities

Background and Description: Recycling programs are a highly visible indicator of the County's commitment to environmental stewardship. Recycling is also an activity that County employees participate in on a daily basis and can relate to based on their experience with residential recycling. Throughout the development of the Plan, employees showed significant interest in improving the County's internal recycling program and provided suggestions on areas for improvement. This measure and its supporting actions reflect this employee input and are intended to strengthen the County's recycling programs by both increasing the types of materials collected (e.g., adding composting collection)[127] and expanding the locations serviced by those programs (e.g., public areas and leased facilities).

[127] Paper towels make up a majority of the organic matter in the County office building waste stream and would be a good initial focus.

Efforts to expand the County's waste diversion program will also continue to draw on the results of the 2004 waste assessment conducted by the General Services Agency. That project involved surveying the contents of 120 County dumpsters and interviewing field staff to identify cost-cutting measures as well as determine the amount of recyclables ending up in the trash. The recommendations that resulted were aimed at streamlining trash management and prioritizing material types for diversion. Some of the facility specific improvements identified in that assessment can be expanded.

Priority Tier: First

Potential next step(s): Determine focus areas for improvements in the existing recycling program by reviewing staff suggestions on recycling programs collected during the Plan's development. Review findings and recommendations from the 2004 waste sort. Undertake a follow-up waste sort and engage key decision makers.

SW-2 Develop and monitor construction and demolition waste plans for all construction projects

Background and Description: The waste generated during the construction and demolition (C&D) of buildings is often overlooked when considering the carbon footprint of a building. For example, the construction and operation of a new green building produces less GHG emissions than a "traditional" building. A recent study by StopWaste.Org showed that a significant portion of those GHG reductions are associated with the diversion of construction waste from the landfill.[128] Alameda County set out to address the environmental impacts of construction and demolition waste in its 2003 Green Building Ordinance. This policy requires 50% of all County generated C&D waste to be recycled or otherwise diverted from the landfill. With the passing of the 2008 waste reduction resolution, the County now sets a goal for contractors to exceed a 75% diversion rate. [129]

The new Juvenile Justice Center (JJC) was one of the first large-scale projects to fall under the Green Building Ordinance. During the construction phase of this project, 93% of the C&D waste generated was recycled, far exceeding the policy requirement. This included keeping 3,000 tons of crushed rock and 600 tons of glass, aluminum, and plastics out of local landfills.

This measure is aimed at supporting existing efforts to divert C&D waste by improving monitoring and verification to ensure that smaller projects are not overlooked. This will require including C&D plans as a standard part of all construction projects and setting up a formal system for monitoring C&D waste disposal throughout the project. The County is currently supporting efforts to develop a web-based tracking tool that will make tracking and reporting C&D waste easier for contractors and County project managers alike.

Priority Tier: First

Potential next step(s): Update construction specifications to address changes in C&D diversion opportunities, goals, and reporting requirement. Implement reporting requirements for all projects meeting the project threshold requirement.

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[128] Roberts, Jennifer, "Adding up the Climate Benefits of C&D Recycling," *C&D World,* July/August 2009. Note that the study reviewed residential construction, which was considered a reasonable proxy in lieu of commercial data.
[129] Alameda County Resolution 2008-213 establishes a goal of 75% reduction in waste going to landfills by 2010 for unincorporated areas and civic operations of the County of Alameda.

SW-3 Continue to investigate and implement actions to reduce waste generation at detention facilities (e.g., waste sort, recycling, eliminating single-use items)

Background and Description: Waste diversion at County jails is challenging given the serious security considerations that need to be addressed to maintain a secure environment and ensure inmate and public safety. Jails, however, also provide a unique opportunity to achieve high waste diversion levels given the control that the County exercises over what materials are allowed in and out of the facilities. Because of their size and function as living units, Santa Rita and North County Jails are also the largest producers of waste within the County's operations.

The County has already launched a number of waste diversion programs at Santa Rita Jail. Recently, a reusable eating utensil program replaced more than 2.9 million disposable utensils that formerly entered the waste stream each year. The kitchen recycles the packaging materials associated with food preparation (#10 cans and boxes). Additionally, a significant portion of the waste stream is diverted from landfills to a compost facility.

This measure calls for continued diligence in the effort to minimize the waste sent to landfills from the County jails as a necessary step towards achieving zero waste. This should include replicating successful programs, such as the use of reusable utensils, at other County detention facilities. Other single-use items (e.g., bottles, condiment packages) can be eliminated from use in the jails. Setting up systems to sort the waste before it enters the waste stream will improve the County's ability to compost the waste generated and remove recyclable and reusable items (e.g., plastic bottles and meal trays) from the waste stream.

Priority Tier: Second

SW-4 Increase efforts to prevent waste from being generated at County facilities

a. Consider waste generation and end-of-life disposal in purchasing decisions
b. Avoid bottled water use in the workplace and provide information on the health and environmental impacts of bottled water
c. Promote the use of reusable dishes and cutlery in offices and at meetings
d. Replace disposable batteries with rechargeable batteries

Background and Description: This measure is aimed at reducing waste by moving away from disposable products towards the use of longer lasting, more durable goods. This measure is closely tied to the development of the Sustainable Purchasing strategy outlined in the Cross-cutting strategies section of the Plan. Prior to purchase, the County should consider issues that arise when disposing of the items at the end of their useful life. Items that can be reused or recycled should be given priority. The County should also work with manufacturers to encourage them to take back the items they sell for refurbishing or remanufacture. The County should also explore alternative procedures that do not require purchasing goods, such as leasing items or buying services.

The supporting actions associated with this measure promote broader adoption of some of the best practices that are already being taken by some County agencies. For example, County Counsel stocks its break area with durable plates and utensils to make it easier for employees to reduce the use of disposable kitchenware. The County Administrator's Office replaced disposable water bottles with pitchers of water at Board meetings to eliminate plastic waste and the carbon footprint of bottled water. The Environmental Health Department has provided all

their offices with rechargeable batteries and chargers to eliminate the need for using disposable batteries. An organized approach to implementing these measures in other agencies will be important to facilitate sharing of these best practices.

Priority Tier: Second

SW-5 Continue and expand the use, reuse, and recycling of materials generated or collected from County-maintained right-of-ways and public spaces

a. Recycle appliances, e-products, scrap metals, and batteries collected on County right-of-ways
b. Compost or mulch wood chips and leaves
c. Recycle asphalt grindings to create road base
d. Use recycled paint from Household Hazardous Waste for graffiti abatement

Background and Description: Each year, the Public Works Agency collects tons of discarded materials from the right-of-ways under its jurisdiction. Public Works currently has an ongoing grant from the California Integrated Waste Management Board to recycle tires that are dumped on roads and in channels under their jurisdiction. Other materials dumped in the roadways, such as scrap metal, appliances, e-products, and batteries, are collected and recycled by Public Works as well. This measure calls for the agency to continue and expand these efforts.

Priority Tier: Third

SW-6 Evaluate opportunities in the County's materials reuse programs to maximize waste diversion and minimize waste generation

a. Increase the visibility and accessibility of existing programs (e.g., create online catalog of items available for reuse)
b. Investigate opportunities to increase the efficiency of handling hard-to-process items (e.g., cubicle walls)

Background and Description: In addition to being responsible for recycling millions of pounds of paper, metal, and plastics each year, the County's Property and Salvage department reuses or sells an additional 16,000 items per year. Property and Salvage collects used furniture, electronics, and other equipment from County agencies for reuse in other County facilities, donation to schools, or sale to the public.

This measure calls for the County to develop ways to better promote the services that Property and Salvage provides. This could include increasing the ease with which employees have access to Property and Salvage's inventory (e.g., through developing a user friendly online catalog or other tools) and regularly promoting Property and Salvage's services in internal communications. Since some items are difficult to store and reuse, this measure also calls for the development of partnerships between the County and recycling businesses to find new end-of-life uses for hard-to-process items.

Priority Tier: Third

SW-7 Advance programs that increase employee participation in the County's waste reduction and diversion efforts

a. Minimize or eliminate desk-side garbage bins in favor of central garbage collection
b. Provide ongoing waste reduction training for County employees

Background and Description: The success of Countywide recycling efforts depends on employees' understanding how to participate in these efforts as well as getting in the habit of disposing of their waste in the correct locations. This measure recommends eliminating desk-side garbage bins in favor of mini bins that employees empty into a central bin, in order to encourage employees to form the habit of separating recyclables from trash. Elimination of large desk-side trash bins is a step that has been taken by many local governments and academic institutions and has been shown to minimize employees' accidentally placing recyclables in the trash bin.[130] This measure further calls for providing clear and readily accessible waste reduction information and training to all employees. It is important to regularly assess gaps in waste-reduction training efforts and update materials with new information, as well as make sure that feedback and communication is encouraged when employees have questions or concerns.

Priority Tier: Third

Potential next step(s): Identify pilot location for elimination of desk-side garbage bins. Assess gaps in waste-reduction training efforts and the need for new materials and approaches.

PAPER WASTE REDUCTION STRATEGY

The Climate Action Plan's paper waste reduction strategy is aimed at reducing the total amount of paper used by the County.[131] Reducing paper use achieves GHG reductions in a number of ways. It results in the County's sending less paper to the landfill, which reduces the amount of methane gas released from the landfill. It results in fewer trees, which absorb carbon dioxide, being cut down. It also reduces the emissions from manufacturing and transporting paper.

The County has been working on paper reduction since the late 1990s, when a source reduction committee met to facilitate paper reduction efforts. More recently, the County has been replacing paper-based processes with electronic and online systems, such as switching from paper to electronic pay stubs. The County has many opportunities to build on these efforts and further reduce paper use. The County should set a measurable paper use reduction target and work with agencies to ensure it is met. Efforts to reduce paper towel waste (which makes up 20% of the County's waste stream) should be increased. The County should also investigate additional ways to switch from paper to electronic communications.

[130] California Integrated Waste Management Board, *Mini Trash Bins Help Office Settings Reduce Waste 50 Percent and More: A Model for Local Government Recycling and Waste Reduction*, Publication #310-02-007, provides a good review of these efforts.
[131] Increasing the recycled content of the paper purchased is dealt with in the Sustainable Purchasing strategy.

2020 GHG Reduction Potential: 728 metric tons CO_2e (plus and additional 1,497 metric tons CO_2e in lifecycle reductions)[132]

Co-benefits: Cost savings; Natural resource conservation

GHG Reduction Measures– Paper Waste Reduction Strategy

This section describes the measures that make up the Solid Waste action area – Paper Waste Reduction strategy. Table 17 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[133]

GHG Reductions & Co-Benefits:  ; Resource Efficiency:  ; Practicality: 

A discussion of each measure in this strategy is included after Table 17 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 17: GHG REDUCTION MEASURES – PAPER WASTE REDUCTION STRATEGY

#	Measure Name	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
SW-8	Develop and implement a comprehensive paper-waste reduction policy that includes specific reduction targets	1st			

SW-8 Develop and implement a comprehensive paper-waste reduction policy that includes specific reduction targets

a. Ensure key agencies (i.e., agencies providing centralized services and agencies whose work is paper-intensive) are involved in designing comprehensive paper reduction policies and standards
b. Minimize paper-based communication to employees
c. Reduce paper towel use

Background and Description: The County has already started working to reduce paper consumption. Efforts to digitize documents and provide more County services electronically (discussed in the Cross-Cutting measures) have reduced the need for paper processes. Unfortunately, the modern reliance on computer-based communications can also complicate paper reduction efforts. A StopWaste.Org report states that "the introduction of email into organizations has resulted on average in a 40% increase in paper consumption," most likely because employees have gotten in the habit of printing out emails and documents instead of reading them online.[134]

[132] Lifecycle emissions reductions are in addition to the GHG emissions reduced at the landfill. They are primarily related to upstream emissions. Lifecycle emissions reductions are provided as information only and were not included as part of the emissions reduction target.
[133] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.
[134] StopWaste.Org, "Paperless Express: A Paper Use Reduction Guide for Your Business." Available at www.stopwaste.org/docs/paperlessguide.pdf (accessed on April 7, 2010).

With a concerted effort focused on changing employee habits, combined with additional efforts to move away from paper-based communications, the County has the potential to achieve significant paper use reductions – and the cost savings that come with them. In 2004, the City of Seattle set out on a similar effort that has achieved an impressive 30% reduction in paper use. Their program, called PaperCuts, included components that have not previously been tried by Alameda County. Specifically, they set a measureable target, tracked paper use at the departmental level, and posted department specific progress towards their goal on a public website.

Examples of the types of actions that can be included in the County's paper reduction effort are:

- Set copiers and printers to default to double-sided printing as a standard setting;
- Use central printers vs. desktop printers to discourage unnecessary printing;
- Update mailing lists to avoid duplications and remove names of employees no longer with the County;
- Proof and review documents onscreen; and
- Provide training for online storage strategies to replace paper storage.

None of these actions are particularly difficult but will require department heads and management staff to take steps to establish these actions as the norm. These steps include adopting policies that lead to paper reduction, engaging employees to encourage changes in behavior, and modeling the behaviors they are promoting.

Priority Tier: First

Potential next step(s): Convene key partners to develop a paper reduction goal supported by a timeframe and a course of action for achieving that goal.

CHAPTER 8: BEYOND REDUCTIONS ACTION AREA

The Beyond Reductions action area contains strategies and measures aimed at moving beyond reducing the County's greenhouse gas (GHG) emissions. Reducing greenhouse gas emissions at their source is the priority of the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan). However, the County should employ additional strategies to supplement its climate protection efforts.

The Beyond Reductions action area includes two strategies aimed at both removing carbon dioxide from the atmosphere and preparing for the impacts of climate change. These strategies include promoting the **carbon capture and storage** potential of natural ecosystems (i.e., forests, wetlands, urban tree cover) and laying out a **climate change adaptation** program to prepare for the impacts of a changing climate.

Alameda County Commitments to Climate Protection addressed in the Beyond Reductions action area:

15. Take advantage of opportunities to capture and store carbon on County property and throughout the unincorporated communities (e.g., tree cover, wetlands, and salt ponds).
16. Convene a climate adaptation workgroup to assess the County's vulnerability to climate change and develop recommendations to minimize those risks.

GHG Reductions: In 2020, the measures that the County takes in the Beyond Reductions action area will **reduce predicted GHG levels by an estimated 40 metric ton CO_2e**.[135]

Monitoring and Reporting: Recommended monitoring and reporting includes (but is not limited to) establishing a systematic approach to:

- Tracking the increase in carbon storage and sequestration capacity from County sponsored projects; and
- Providing progress reports on efforts to adapt to the impacts of climate change.

CARBON CAPTURE AND STORAGE STRATEGY

Green infrastructure (urban forests, tree cover, wetlands, and other natural areas) forms an interconnected network of vegetation that provides a community with a number of beneficial ecosystem services. These include:

- Managing storm water by increasing infiltration into the soil, which reduces flood risks and improves water quality;
- Providing habitat for birds and other animal species;
- Reducing noise and air pollution by acting as a physical barrier and air filter; and
- Beautifying neighborhoods, which in turn increases property values.

Trees and other vegetation also remove carbon dioxide from the atmosphere through photosynthesis. The carbon removed from the air is then stored in the body of trees and plants for years or even decades. Trees further prevent emissions by shading buildings in the summer

[135] The GHG reductions do not include state-level or lifecycle reductions but rather refer only to the direct reductions related to meeting the County's target.

(decreasing electricity needs for air conditioning) and lowering ambient temperatures of urban areas (by shading streets, sidewalks, parking lots and other paved areas).

This strategy encourages the County to take advantage of an opportunity to protect the climate and improve the quality of life for its residents by expanding urban forests and tree cover, restoring creek, river, and wetland ecosystems, and creating new parks, gardens and open spaces.[136] The Public Works Agency already has an active tree planting and ecosystem restoration program. Efforts should be made to expand on this program to maximize the tree and vegetation cover in the County.

2020 GHG Reduction Potential: 40 metric tons CO_2e

Co-benefits: Natural resource conservation; Habitat preservation; Increasing property values; Air quality improvements, Storm water management

GHG Reduction Measures – Carbon Capture and Storage Strategy

This section describes the measures that make up the Beyond Reductions action area – Carbon Capture and Storage strategy. Table 18 provides an at-a-glance overview of the individual measures, their priority tier, and how they scored in the categories of:[137]

GHG Reductions & Co-Benefits: ; Resource Efficiency: ; Practicality:

A discussion of each measure in this strategy is included after Table 18 and provides supporting actions (where identified), a description of the measure, and additional background information. For measures prioritized as first tier, potential next steps for implementation are also included.

TABLE 18: GHG REDUCTION MEASURES – CARBON CAPTURE AND STORAGE STRATEGY

#	Measure	Priority Tier	GHG Reductions & Co-Benefits	Resource Efficiency	Practicality
BR-1	Restore and protect the ability of natural ecosystems to capture and store carbon	1st			

[136] More information on this strategy can also be found in the *Alameda County (Unincorporated Areas) Community Climate Action Plan*, available at www.acsustain.org/what/climate/plan.htm.
[137] See Chapter 2 and Appendix D: Methodology Notes for more information on the prioritization tier and other categories.

BR-1 Restore and protect the ability of natural ecosystems to capture and store carbon

a. Assess opportunities for carbon sequestration projects on County property (e.g., wetlands, salt ponds)
b. Continue to expand the tree planting and other carbon capture projects on County property and in the unincorporated communities

Background and Description: The County's GHG reduction program can be enhanced by efforts to remove carbon dioxide from the atmosphere. Programs to increase tree cover and restore ecosystems have an impact on climate change and provide a number of benefits to local communities.[138] This measure calls on the County to continue and expand its Urban Forestry Program and increase planting and maintenance of public trees throughout the unincorporated County.

To implement this policy, the County will develop an Urban Forest Management Plan that creates design, planting, and maintenance guidelines and coordinates implementation among departments and relevant utilities. Separate guidelines will be created for the different land use contexts within the County. An important component of the management plan will be a public tree inventory and canopy coverage analysis that examines existing urban forest conditions and identifies priority management areas. The public tree inventory will be updated annually and used to monitor tree health and evaluate the carbon sequestration potential of the urban forests. The Urban Forestry Program will also provide expanded public outreach and education regarding the benefits of the urban forest. This effort will seek volunteer assistance in planting and caring for public trees.

The Urban Forestry Program will set a goal of planting 5,000 new public trees by 2020 (500 new trees per year). The County should require planting of tree species that are known to be low-maintenance, are compatible with streets, sidewalks and other infrastructure, and provide high levels of sequestration and optimal building energy reduction benefits.

Priority Tier: First

Potential next step(s): Pursue funding opportunities to support expansion of the County's urban forestry program.

[138] This measure is closely related to and shares a description with the *Alameda County (Unincorporated Areas) Community Climate Action Plan's* measure "G-1: Expand the urban forest (e.g., street trees and trees on private lots) in order to sequester carbon and reduce building energy consumption." The County should also encourage property owners to take steps to increase tree cover on private property, but this measure is focused on actions the County can take as part of its own operations.

CLIMATE CHANGE ADAPTATION STRATEGY

The Board of Supervisors has also committed to preparing for the future effects that climate change will have on the County and its communities.[139] Efforts to reduce GHG emissions are geared towards lessening those impacts; however, the impacts of climate change are already being felt. Even if all human caused GHG emissions are halted immediately, there will still be a certain amount of global warming and climate change. Carbon dioxide remains in the atmosphere for 50 to 200 years after being released, and atmospheric GHG concentrations are already much higher than pre-Industrial Revolution levels. Therefore, adaptation to the impacts of a changing climate will become increasingly important in the future as global GHG levels continue to rise and the impacts of climate change become more pronounced. (See the discussion of climate change impacts in Chapter 1.)

The emerging field of climate change adaptation is focused on developing initiatives that reduce the vulnerability of human populations and systems to the numerous threats presented by climate change. Assessing vulnerabilities to climate change and preparing an adaptation strategy will require a dedicated planning process and is not fully addressed in the Climate Action Plan. The measures contained in this strategy provide a starting point for beginning this work. Through this process, Alameda County will take steps to ensure that it is prepared for the impacts of a changing climate and that the County government can respond to – and continue to provide quality services to the public in the face of – climate change related disruptions. These measures also increase the County's resiliency to deal with a wide range of natural and human caused risks and disasters.

The measures included in this strategy correlate to actions recommended by the State in its adaptation plan.

2020 GHG Reduction Potential: Not applicable, actions in this area are geared towards preparing for the impacts of climate change.

Co-benefits: Increased resiliency

Adaptation Measures – Climate Change Adaptation Strategy

Note on the measures in the Climate Change Adaptation strategy: The County recognizes the importance of adapting to the impacts of climate change as well as reducing its GHG emissions. The field of local government climate change adaptation is, however, a complex one. Climate adaptation is also a fairly new field so fewer relevant materials and case studies are available to local governments on this topic than on GHG reduction programs (mitigation). Given these factors, a detailed plan for adapting to climate change was not developed as part of the Climate Action Plan and will need to be developed through a separate process.

The following measures provide insight into what an eventual climate change adaptation strategy might include. However, fleshing out the specific details will be the role of a future planning process. These measures are based in large part on the state-level recommendations

[139] Alameda County Climate Protection Leadership Resolution, R-2006-204.

released in the *2009 California Climate Change Adaptation Strategy*.[140] They have been included here as a starting point for the discussion of the County's adaptation efforts.

BR-2 Convene a climate adaptation workgroup to plan for the impacts of a changing climate

BR-3 Conduct a vulnerability assessment of the greatest risks posed by climate change to the County, including risks to public health and impacts to vulnerable populations

BR-4 Develop a County Climate Adaptation Plan based on the vulnerability assessment

BR-5 Integrate climate change considerations into County facility and infrastructure planning

a. Consider the impacts that climate change will have on infrastructure
b. Avoid locating facilities in areas at risk from flooding, sea-level rise, storm surges, erosion, or temperature and precipitation changes
c. Identify and protect vulnerable infrastructure that has significant economic, cultural, or social value

BR-6 Integrate the impacts of climate change into agency plans for operations and service delivery

a. Integrate climate change impacts into the strategic and business plans of departments that will be affected
b. Update hazard mitigation and emergency operation plans to consider potential climate change related hazards

BR-7 Integrate climate change considerations into community planning processes

a. Amend general plans to avoid potential climate impacts, develop risk reduction strategies, and avoid development in areas that cannot be adequately protected
b. Expand protected areas and update land and water management practices to minimize adverse effects from climate change on sensitive ecosystems and habitat
c. Consider climate change impacts on new development as required by California Environmental Quality Act (CEQA) guidelines

[140] California Natural Resources Agency, "2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008." Available at www.climatechange.ca.gov/adaptation.

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CHAPTER 9: IMPLEMENTATION, MONITORING PROGRESS, AND REPORTING SUCCESS

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) provides guidance for how the County of Alameda will fulfill the vision of creating a sustainable, low-carbon future set forth in its Strategic Vision and climate protection resolutions. The Plan outlines a course of action for meeting the County's 2020 greenhouse gas (GHG) target and lays a foundation for achieving the 2050 long-term GHG reduction target.

Alameda County is comprised of a diverse collection of agencies with unique missions, cultures and operations. Ultimately, the Plan will be most successful if it is fully integrated into the culture of the County and every aspect of how business is conducted. In some cases, coordinated action, implemented across agencies, will be the correct approach. Countywide action will deliver consistent policies, programs, and messages to employees throughout the County; create efficiencies through the sharing of resources; and maximize GHG reductions through comprehensively addressing the sources of emissions. In other cases, emissions reduction measures will be well suited to one agency or department but not another, and it will be important to take a more flexible approach to implementation. In both cases, it will be crucial to track the efforts being made in order to ensure that progress continues to occur. The implementation approach recommended in this chapter attempts to strike the appropriate balance between Countywide and flexible programs.

This chapter contains an overview of structures for implementing the Climate Action Plan and key issues to consider during implementation. This includes a discussion of key roles, timelines, and how monitoring and reporting will be conducted. This chapter also includes a discussion of the broader impacts climate protection actions will have on the County operations.

PRACTICAL CONSIDERATIONS

Creating the culture change needed to minimize GHG emissions will require action by all County employees, by the County's leadership, and throughout all agencies and operations. To lay a foundation for broad action, it is important that each agency takes steps to integrate the Environment/Sustainability strategies and goals from the County's *Strategic Vision* into their operations and business plans, in addition to integrating climate-specific recommendations from this Plan.

Although the Plan identifies a range of measures and assigns levels of priority to each, meeting the 2020 emissions reduction target will require the implementation of all the recommended measures.[141] It is recognized, however, that genuine barriers to implementing some aspects of the Plan will arise. In addition, there may be perceived barriers to implementation based on misconceptions, outdated information, or traditional approaches to doing business. In light of this, the Plan should be viewed as a dynamic document that the County continues to refine over

[141] Implementing all measures does not mean that every person and position in the County will be subject to every measure. In quantifying the anticipated emissions reductions, County staff took a conservative approach that recognized there will be exceptions (e.g., for specific job duties) to across the board implementation.

time. If a recommended measure is simply not a good fit for an agency, that agency should look for creative opportunities to reduce emissions in other ways.

Similarly, external forces will alter the world in which the Plan is being implemented. New information about climate change science will be discovered, new GHG reduction technologies and innovative strategies will be developed, new financing options will become available, and state and federal climate protection legislation will be advanced. It is also possible that future emissions inventories will indicate that the County is not making sufficient progress towards achieving its GHG reduction targets. In order to remain relevant, the Climate Action Plan must be revisited and updated regularly to address this changing environment, and the County must continuously monitor the impact of the emissions reduction measures being implemented.[142]

Even with careful planning, it will be challenging to advance the far-reaching initiatives that are needed to adequately address climate change. Important practical issues for implementing the Plan include the need to:[143]

- Identify a central coordinating entity (agency, department, or individual) to guide and support the implementation process;
- Bring all stakeholders together early in the process – not just those who design and implement projects but also those responsible for long-term operation, maintenance, and upkeep;
- Dedicate funds and staffing resources to support research and planning as well as implementation, to ensure measures are implemented as effectively as possible;
- Account for the lifecycle and long-term costs and benefits of decisions, not just the immediate upfront costs and resource requirements;
- Start implementing actions early, consider smaller pilot projects to identify and address barriers, and build support based on early successes;
- Track progress and continuously reassess to adjust approaches as problems arise;
- Build in enough time to fully develop, vet, and implement a course of action; and
- Ensure that successes are shared and replicated in other agencies.

Finally, it will be important to remember the County's mission and core values when implementing the Plan (see Appendix F: Alameda County's Mission, Vision, and Values).

IMPLEMENTING THE CLIMATE ACTION PLAN

Developing the Climate Action Plan is a significant step in the County's climate protection program; however, implementing the Plan will require additional planning and coordination. The strategies and measures presented may require the identification of additional financial resources, further research and analysis, the involvement of several departments, and, if affecting wages, hours, or working conditions, a meet-and-confer with affected employee organizations.

Many of the measures called for in the Plan are already in some stage of implementation. Those measures will continue to move forward, with input from all relevant parties, as they would with or without the adoption of the Climate Action Plan (e.g., providing recycling services in County facilities, electronic delivery of pay stubs and employee newsletter). Nothing in the

[142] See the Monitoring and Reporting section at the end of the chapter for more information.
[143] Adapted and expanded from "Lessons Learned: Creating the Chicago Climate Action Plan." This document contains valuable insights into the process of developing and implementing a climate action plan. See www.chicagoclimateaction.org/pages/research___reports/8.php (accessed April 7, 2010).

implementation structure of the Plan supersedes existing initiatives or implies that they should be put on hold.

This section outlines the overall structure that the County will use when implementing the Plan. The structure and approach outlined here was designed to fulfill a number of objectives:

- Provide agencies the opportunity to tailor their own course of action for reducing emissions;
- Maintain a level of coordination between different implementers;
- Ensure agencies have the necessary tools to take action; and
- Promote the replication of successful policies and programs.

The same basic oversight structure put in place during the development of the Plan is recommended here to expedite the Plan's implementation.

Organizational Structure and Responsibilities

Meeting the County's GHG reduction targets will require the participation of all agencies, departments, and employees. This section outlines the anticipated roles of County staff and decision-makers in implementing the Plan.

The **Board of Supervisors** will provide strategic direction through adopting the County's 16 Commitments to Climate Protection and other policy directives. They will review progress through regular reports on the implementation of the Plan. In addition, they will consider resource allocations for specific initiatives as needed.

The **Climate Executive Committee** will continue to guide the process, set priorities, develop the scope of work, identify resources, and monitor progress towards meeting the County's GHG reduction targets. Committee members will continue to include the County Administrator and the General Services, Community Development, and Public Works Agencies' directors. The Committee will expand its membership to include other agencies that will be instrumental in implementing the Plan. These may include Information Technology, Human Resource Services, the Auditor/Controller, and Health Care Services.

The current members of the Executive Committee will continue to be supported by their staff, who will have responsibility for overseeing and coordinating the implementation of the Plan, focusing on the following areas:

- General Services Agency – implementing the *Alameda County Climate Action Plan for Government Services and Operations;*
- Community Development Agency – implementing the *Alameda County (Unincorporated Areas) Community Climate Action Plan*;
- Public Works Agency – considering how the County can best adapt to the impacts of climate change; and
- Other agencies added to the expanded Climate Executive Committee – taking the lead on implementing specific measures, as appropriate.

The **Agency Climate Coordinators** will continue to meet (approximately quarterly) as a **Cross-Agency Climate Team**. Their responsibilities will include:

- Helping to coordinate and replicate programs and identifying synergies between their agencies' efforts;
- Reporting back to their department/agency heads;
- Identifying key stakeholders to participate in the development and implementation of particular actions;
- Sharing information among agencies;
- Assisting with employee outreach and education campaigns within their agencies;
- Providing regular updates on their agencies' implementation plans; and
- Reporting on progress for annual updates to the Board of Supervisors.

The **agency directors** from all agencies will be responsible for leading the effort to reduce GHG emissions from their own operations. The individual agencies are in the best position to determine which actions will be most successful in their organizations. Their responsibilities will include, but not be limited to:

- Integrating the Environment/Sustainability section of the *Strategic Vision* into their agency business plans (or continuing to oversee this process if already underway);
- Reviewing the Climate Action Plan to identify measures for implementation within their operations, concentrating on the high-priority measures first;
- Coordinating with other agencies interested in undertaking similar action;
- Leading the development of Countywide initiatives, as appropriate;
- Implementing Countywide initiatives in their own agencies (see Implementation Approach section below);
- Appointing an Agency Climate Coordinator to represent their agency/departments on the Cross-Agency Climate Team;
- Reporting on progress and results; and
- Helping other agencies replicate their successes.

There are also **core agencies and departments** that have responsibility over, or expertise in, particular areas of action. Those agencies will continue to lead, or significantly support, implementation of measures that fall under their purview. These agencies/departments will develop the tools (e.g., policies, procedures, templates, outreach materials) and programs needed to facilitate the easy implementation of GHG reduction measures Countywide. For example, the General Services Agency will develop purchasing policies and guidelines, the Human Resource Services Agency will take the lead on creating online classes and training, and the Information Technology Department will take the lead on instituting electronic document storage and retrieval systems.

The actions of **individual employees** will be critical for the Climate Action Plan to be successful. Many GHG reduction measures require that new choices be made by individuals during their daily activities. Individual employees can identify opportunities to reduce GHG emissions in their work routines, take actions to reduce their emissions (e.g., turning off personal equipment at the end of the day), and encourage others to take action. A list of sample actions that individual employees can take to facilitate the implementation of the Plan can be found in Appendix G: Employee Actions to Reduce Greenhouse Gas Emissions.

Employees will also be key partners in designing and carrying out the emissions reduction measures being implemented by their agencies or as part of a Countywide process. Many of the

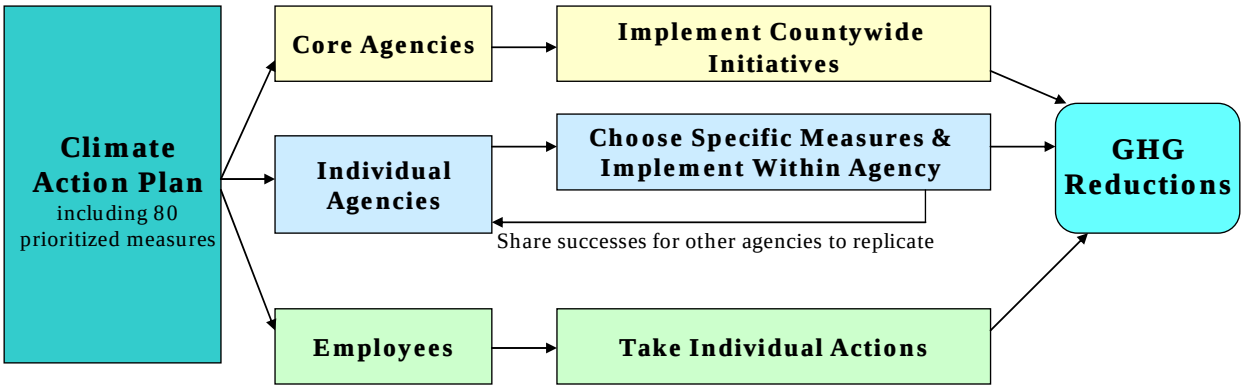
measures included in the Plan rely on education and outreach and the inclusion of individual stakeholders from throughout the County.

Implementation Approach

The structures and responsibilities outlined in the previous section set up a three part approach to implementing the Climate Action Plan. As Figure 12 illustrates, each of the following partners has a role to play in implementation:

- **Individual agencies** will undertake emissions reduction measures within their own operations;
- **Core agencies and departments** will work on key Countywide initiatives; and
- **Individuals** will take action to reduce emissions in their daily work lives.

FIGURE 12: ROLE OF DIFFERENT PARTNERS IN IMPLEMENTING THE CLIMATE ACTION PLAN



Each of these stakeholder groups has a role to play in the successful implementation of each of the GHG reduction measures identified in the Plan. Action will need to occur at each of these levels if the Plan is to have its maximum impact. Table 19 provides an example of how selected measures apply to each level of the County government.

TABLE 19: EXAMPLES OF GHG REDUCTION MEASURES IMPLEMENTATION AT MULTIPLE LEVELS OF COUNTY GOVERNMENT

Measure	Countywide Action	Agency Action	Individual Action
Greening IT (CC-4)	Establish efficiency standards for computer and equipment purchases	• Purchase equipment that meets those standards • Set default settings to maximize energy efficiency (e.g., standby, hibernate and sleep modes) when setting up equipment	Turn off equipment at night and when not in use
Expand programs to divert waste from landfills (SW-1)	Provide recycling, and composting programs	• Ensure that the proper collection bins are available at desks and common areas • Provide information on waste diversion at employee orientations and staff meetings	Dispose of items (e.g., paper, bottles and cans) in the proper bins
Paper waste reduction (SW-8)	Establish paper reduction policies	• Set equipment (copiers, printers, etc.) to print double-sided • Implement systems to digitally store and manage documents	Store and share documents electronically; print double-sided; reuse scratch paper
Fleet management standards to minimize transportation emissions (T-1)	Adopt a green fleets policy	• Determine if a vehicle needs to be purchased or if pool vehicles could be used • Specify smaller, higher-efficiency vehicles	Request hybrid or alternative fuel vehicles when checking out a car

This approach blends top-down and bottom-up systems for implementing new policies and programs. Individual agencies will act as the primary drivers of the Climate Action Plan, supported by core agencies working on Countywide efforts. Implementation will be an ongoing and dynamic process, with agencies continuing to select new measures until the Plan is fully implemented.

Individual agencies will be responsible for helping others replicate their successful programs. Coordinating efforts will make implementation more efficient for all agencies because it takes advantage of synergies and economies of scale and avoids reinventing the wheel within every department. The Cross-Agency Climate Team and Climate Executive Committee will ensure that the replication of agency efforts is coordinated and implemented in the most efficient and effective manner.

For Countywide efforts, core agencies will take the lead on the development and implementation through an inclusive process. Developing these broad Countywide policies and initiatives will entail working with agencies, the Climate Executive Committee, and the Cross-Agency Climate Team to identify measures on which to focus initial efforts. The core agency will identify the appropriate stakeholders to assist with the development of new policies, programs, or actions (e.g., an agency's Information Services or Human Resources representative, technical experts, administrative officers, or union representatives). These efforts will result in the development of programs and tools (e.g., policies, procedures, templates, outreach materials) that agencies need

to implement these Countywide measures internally. They will also result in the development of consensus-based recommendations for broader Countywide policy directives.

This implementation approach will be most effective if there is a robust monitoring and reporting system in place to track progress (see the Monitoring and Reporting section below).

Embarking on Measures Implementation

When an agency or individual begins working on a measure identified in the Climate Action Plan, resources will be available. For example:

- The detailed measures descriptions in Chapters 3 to 8 provide an overview of each of the recommended measures, many supporting actions, and some suggested next steps;
- The Cross-Agency Climate Team (or individual Agency Climate Coordinators) can tell employees if a similar initiative has been completed, is underway in another agency, or is underway Countywide;
- The Cross-Agency Climate Team can also help determine which agencies are considering a similar measure and would be interested in partnering or providing advice;
- The County's sustainability website (www.acsustain.org) contains information on existing policies and programs that are related to the strategies in the Plan, as well as best practices from other County agencies. An upcoming Intranet site will provide employees with a one-stop-shop for sustainability resources in the County.

Key First-Year Deliverables

Meeting the 2020 GHG emissions reduction target will require aggressive early action. The Climate Action Plan contains numerous GHG reduction measures, many of which will take time to fully implement. The following is a preliminary list of actions that should be accomplished within the first year after adoption of the Plan to begin the implementation process:

- The Plan is rolled out to agencies and employees following its adoption by the Board of Supervisors (via newsletter articles, workshops, updated Intranet site);
- The Climate Executive Committee, in consultation the Agency Climate Coordinators, develops a timeline for focusing on each of the measures in the Plan and identifies the appropriate lead agencies;
- The Climate Executive Committee develops mechanisms for incentivizing GHG reductions and begins identifying resources to use in the implementation of GHG reductions;
- Individual agencies embark on their own internal climate planning process, with the goal of implementing at least two new measures each year;
- The Agency Climate Coordinators determine the meeting schedule and structure for the Cross-Agency Climate Team and begin providing input into measures implementation; and
- The General Services Agency (as coordinator for the Plan) begins developing a formal system for monitoring and reporting progress.

MONITORING AND REPORTING

In order to ensure that the Climate Action Plan is on course for meeting its targets, it is important to track progress and provide regular updates on the results. Therefore, implementing a formal system for monitoring and reporting on progress is critical. This will allow programs to be adjusted to operate at peak efficiency.

At least three types of tracking systems are needed:

- Agency reports on new programs, progress made, and results realized;
- Central tracking of performance indicators (e.g., energy use, goods purchased, materials recycled) to measure the impact of actions; and
- A complete re-inventory of GHG emissions levels approximately every three years to ensure that total GHG emissions are decreasing and that the benefits of emissions reduction measures are not being offset by increases in emissions in other areas of the County's operations.

Examples of some of the performance indicators that should be tracked can be found in the introductions to the individual action areas in Chapters 3 to 8. The County should work to define a comprehensive set of metrics to measure its environmental impact, follow progress over time, and identify areas for improvement. This information should be collected in a systematic way, preferably on an annual basis. It will form the basis of reports to the Board of Supervisors and the public on the County's progress towards implementing the Plan and meeting its GHG reduction targets.

Monitoring and reporting is not a one-way street. Although information on program implementation will be collected centrally, information will also be provided back to the agencies. Information on programs implemented in one agency will provide valuable insights to other agencies designing similar initiatives. Similarly, information on their own performance will help agencies identify opportunities for increasing the efficiency of their operations. For example, an agency that learns it is using more paper per employee than other County agencies has an opportunity to reduce office supply costs and GHG emissions by adopting paper reduction strategies that have been successful in other agencies. Information about an agency's energy use, vehicle miles traveled, or waste generation and recycling – as compared to other agencies – can provide a sense of the effectiveness of programs and efficiency of operations.

As part of the regular re-inventory of GHG emissions and reviews of the Climate Action Plan, the County will explore the latest climate science findings, investigate new opportunities for GHG reduction and climate adaptation, and respond to changes in state and federal climate policy. Incorporating these changes into the Climate Action Plan will ensure that the Plan remains an effective and efficient guide for the County's GHG reduction efforts.

Finally, a system of monitoring GHG emissions will help the County prepare for any future state or federal reporting requirements that may be instituted. Perhaps most importantly, it will demonstrate to funders, regulators, and citizens that the County is serious about its GHG reduction programs and is willing to be held accountable.

OTHER IMPLICATIONS OF CLIMATE PROTECTION ACTIONS FOR COUNTY GOVERNMENT

Alameda County's past experiences in the climate protection and sustainability field illustrate that actions taken for environmental protection can yield financial savings and other benefits without affecting services. The Climate Action Plan builds on these past successes. Meeting the County's GHG emissions reduction target will require innovation, immediate action, and an examination of all aspects of how government operates to ensure that services are being delivered as efficiently and effectively as possible. The cumulative effect of making changes to current procedures will lead to a transformation in the County's operations to systems that are more effective, resilient, and sustainable.

Financial Impacts

Financial impacts are an issue that typically arises when embarking on a new project or program. Climate protection is no exception. Multiple variables make it difficult to identify exact costs and savings associated with implementing the Climate Action Plan. However, based on available information, many of the climate protection measures identified will not place a financial burden on the County, can be cost neutral, or will even lead to financial savings. This analysis does not constitute a full cost-benefit analysis, as the Climate Action Plan is a guidance document and does not prescribe the specifics of how each action will be implemented. Where appropriate, an in-depth review of costs, cost savings, and funding sources for specific initiatives will be carried out by the agency leading the development and implementation of that initiative.

Ultimately, decisions on how to move forward with the Plan's implementation will be determined by funding opportunities and an evaluation of the benefits resulting from investments in the emissions reduction measures.

The County has a great deal of flexibility around how, when, and the extent to which action is taken. Calculations of the GHG reductions were based on existing plans, historic trends, and discussions with subject area experts and staff about reasonable levels of implementation. Many implementation measures can be either scaled up or back. For example, the County could purchase more or fewer electric vehicles or retrofit more or fewer buildings. The County could also choose to hold off on implementation of certain measures altogether until a future date. All of these choices will impact potential costs and savings.

Many of the measures identified are already in the short- and long-term plans of County agencies (e.g., the purchase of fuel-efficient vehicles or energy-efficient computers). These measures would not incur additional costs beyond those already planned.

The recommended measures included in the Plan also promote long-term cost savings and efficiencies. Some actions have lower upfront costs and save money in the long term (i.e., purchasing hybrid vehicles has a relatively low cost premium and saves fuel throughout the life of the vehicle). Some actions have more significant upfront implementation costs accompanied by major long-term savings potential, such as new solar systems or a new chiller at the data center.

Many measures can be carried out by existing employees and through shifts in how current processes are completed rather than through creating new workloads or new processes. For example, simple changes, such as adjusting temperature settings in facilities or setting

equipment to print double-sided and power down when not in use, yield significant energy and resource savings with very minimal staff time or costs.

Taking action to protect the climate can even create new opportunities. Grants are becoming available for innovative projects that are part of an adopted climate action plan. Alameda County has a successful track record of securing funding and rebates for projects. This is expected to continue as the County remains a leader and innovator in the sustainability field.

Although additional funding will need to be identified to fully implement the Plan, economic conditions will change, and new opportunities will become available, over the ten-year implementation period. In any event, each measure will receive additional analysis prior to implementation to ensure that it would be both fiscally sound and consistent with County policy.

Identifying the appropriate resources needed to implement the Climate Action Plan is the responsibility of the Climate Executive Committee and the agency directors. A variety of innovative funding mechanisms can be explored. Examples include revolving loan funds that finance future projects from past energy savings, energy services contracts where payment is based on future savings, bulk purchasing, and low-interest loans for projects that have short payback periods.

Improving Services

The Climate Action Plan is not a set of new or additional requirements on County services but rather a tool to help the County fulfill its existing goals and mandates. It provides a menu of options for implementing the Environment/Sustainability section of the Strategic Vision and will provide the County with substantial non-environmental benefits.

Other jurisdictions that have implemented climate protection measures have found that their efforts can improve operational efficiency and save money in the long run. Most measures are simply good business practices that promote financial savings, high-quality service, and operational efficiencies. In an era of economic uncertainty, the County should take every opportunity to promote efficiencies and explore new way to deliver services.

CONCLUSION

Dealing with climate change is one of the greatest challenges in human history, requiring local action and global coordination. At the local level, climate protection will be a defining factor in how communities evolve in the twenty-first century.

Success in meeting this challenge and achieving climate prosperity will require rethinking conventional approaches to County operations, from transportation and energy systems to purchasing practices and waste generation. Unsustainable practices, such as relying exclusively on fossil fuels to meet transportation and energy needs and purchasing large quantities of disposable goods that end up in landfills, do not help the County meet its commitments to fiscal responsibility, efficient operations, and GHG reductions. Responding to the threat of climate change will require a fundamental shift in how the County provides services to the community.

The Climate Action Plan provides a full range of actions that need to be taken, touching on almost every aspect of the County's operations. These include building on existing efforts to green the County's fleet; helping employees find other options besides driving alone to work;

generating energy from clean, renewable sources; and choosing to purchase reusable, reparable, high-quality items.

Implementing the Plan is a way for the County not only to do its part to address this global environmental issue, but also to create financial savings and other benefits for the County and larger community. These include spending less taxpayer dollars on energy, expanding participation in County processes, creating new business and employment opportunities by providing markets, and offering services to the community in a more accessible and transparent fashion.

A Comprehensive Government Operations Plan

A number of leading city and county governments have developed climate plans over the past 10 years. These plans tend to address both community and government operations in an integrated fashion. As a result, government operations in these plans often take a back seat to broader community planning. Building on Alameda County's long history of greening its operations, the *Alameda County Climate Action Plan for Government Services and Operations* was developed in a separate (but parallel) process from the *Alameda County (Unincorporated Areas) Community Climate Action Plan*. This allowed the County to undertake a comprehensive and focused review of its own operations and services and has led to a Plan with three distinctive characteristics.

First, the *Alameda County Climate Action Plan for Government Operations and Services* is distinctive in presenting a detailed and comprehensive course of action that will direct the County's approach to government operations and delivery of services in a future increasingly defined by climate change. Because many of the specific actions recommended in the Plan are already underway – such as environmentally preferable purchasing, renewable power installations, sustainable fleet programs, and urban forestry – the Plan is able to set higher bars in these areas. We hope that this 10-year plan will inspire other local governments to look more comprehensively at how changes to their operations can reduce emissions, achieve long-term cost management, attract and retain high-performing employees, and modernize operations in order to efficiently deliver the highest quality service to their communities.

Second, the Plan evolved through a multi-year inclusive process. The approach was designed to actively engage the core agencies most responsible for decisions impacting GHG emissions, include staff with specific expertise, and invite all employees to provide input. The General Services Agency led the initiative in partnership with the Community Development Agency and the Public Works Agency. In addition, 19 agencies had at least one representative participate in the process on a team of Agency Climate Coordinators, and their directors had the opportunity to review the Plan at key stages. What resulted is a wide-ranging set of climate protection strategies designed to engage all employees and agencies in reducing the County's carbon footprint.

Third, the development of the Plan included a high level of analytical rigor in measuring the impact of operational measures. The recommended course of action that emerged from this cooperative process is backed by a thorough analytical process supported by an extensive body of research. Detailed analyses provide a high level of confidence that, when implemented, the Plan will achieve results in the near term, meet the County's GHG emissions reduction targets, and establish a solid foundation for the County's future.

Preparing for the Future

With the support of County leaders, employees, and residents, the *Alameda County Climate Action Plan for Government Services and Operations*, in combination with its sister plan, the *Alameda County (Unincorporated Areas) Community Climate Action Plan*, can provide the benefits of climate protection to the residents of Alameda County. Climate protection contributes to many of the County's and region's highest priority goals, including energy security; mobility and transportation choices; reliable and affordable water supplies; forest and wetland protection; and sound fiscal management of public funds.

While the Plan alone cannot create a low-carbon future, the community will benefit from the Plan's contribution to other County and regional efforts, including:

- The development of a vibrant local economy based on green jobs;
- Creation of a strong sense of community based on working together for a common purpose;
- Promotion of healthy physical activity and cleaner air;
- Protection of regional farmland and local agriculture;
- Continuous improvement to systems designed to meet residents' needs;
- Improved building quality and reduced energy waste; and
- Improvement in overall quality of life.

The 14 cities in Alameda County and many other Bay Area jurisdictions are developing and implementing climate action plans, providing opportunities for a strong, coordinated regional approach to climate prosperity. The County joins over 1,000 local governments in taking action to reduce GHG emissions, and the cumulative effects of this local action taken throughout the region, nation, and world, will significantly improve community sustainability through climate protection.

APPENDIX A: ALAMEDA COUNTY RESOLUTIONS RELATED TO CLIMATE PROTECTION

Over the last decade, Alameda County has passed a number of resolutions related to climate protection. These resolutions formally recognize the importance of climate change as an issue for the County to address and lay the foundation for the development of the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan). They commit the County to taking action to reduce its greenhouse gas emissions and prepare for the impacts of climate change, as well to address emissions from the unincorporated communities.

This appendix contains copies of the following Alameda County's policies related to climate protection:

- Climate Change Leadership Strategy Resolution (R-2006-204)
- Resolution Signing the Cool Counties Declaration (R-2007-336) and *U.S. Cool Counties Climate Stabilization Declaration*
- Resolution Adopting the Commitments to Climate Protection, Climate Action Plan, and Greenhouse Gas Emissions Reduction Targets for Government Services and Operations (R-2010-170)

R-2006-204
ATTACHMENT A

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA ESTABLISHING COUNTY CLIMATE CHANGE LEADERSHIP STRATEGY

BE IT RESOLVED by the Board of Supervisors of the County of Alameda:

Whereas, the County recognizes that climate change is one of the most critical sustainability issues threatening the long-term human and environmental health, social well-being, and economic vitality of the community; and

Whereas, scientific consensus established by the Intergovernmental Panel on Climate Change, the United Nations assessment panel of hundreds of the world's climate experts, and the National Science Academies of the G8 nations and Brazil, China, and India, has determined that the continued buildup of greenhouse gases released into the atmosphere as a result of human activities threatens the stability of the Earth's climate; and

Whereas, the physical consequences of climate change are already evident, including rising sea levels, increased hurricane intensity, and species migration, and the Intergovernmental Panel on Climate Change has determined that stabilizing concentrations of climate-altering gases in the atmosphere will require significant reductions in greenhouse gas emissions; and

Whereas, 162 countries, including the U.S., pledged under the United Nations Framework Convention on Climate Change to reduce greenhouse gas emissions and seek the stabilization of greenhouse gas reductions in the atmosphere; and

Whereas, the State of California Executive Order S-3-05 establishes greenhouse gas reduction targets for California including reducing emissions to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050; and

Whereas, the U.S. Environmental Protection Agency predicts severe impacts from climate change in the State of California, which will affect Alameda County on the local scale: increased temperatures threaten to impair County air quality and adversely impact human health; increased temperatures threaten to greatly reduce the Sierra snow pack, one of the County's primary sources of water; rising sea levels threaten Alameda County's valuable coastal real estate and natural habitats; and

Whereas, economic impacts of climate change such as higher prices for food, water, and energy as well as health care costs threaten to disproportionately burden low-income households; and

Whereas, the productivity of Alameda County businesses would be undermined by global warming effects such as damage to public infrastructure, higher operating costs, and reduced production in the County's agricultural sector; and

Whereas, many of the practices and technologies that reduce greenhouse gas emissions, some of which have been successfully implemented by the County, also generate cost savings, and mitigation actions are an investment in reducing future costs of adapting to global warming effects; and

Whereas, local governments can lead by example in the operation of governmental facilities, through guidelines and requirements in community planning and services, and by supporting climate change mitigation strategies which enhance the community's quality of life; and

Whereas, by choosing to join over 670 local governments around the world in the Cities for Climate Protection Campaign (CCP), we capitalize on the experience and knowledge of other government entities through the network coordinated by ICLEI - Local Governments for Sustainability; and

Whereas, participating in the five milestones of the CCP will provide a means of identifying and acting on opportunities to improve community livability, sustainability, and enhance quality of life;

NOW, THEREFORE BE IT:

Resolved, that as a tangible first step toward addressing the broader tenets of sustainability, the County of Alameda commits to progress through the CCP's five milestones, specifically:

1. conduct a greenhouse gas emissions inventory and forecast;
2. establish County greenhouse gas emissions reduction targets;
3. develop an implementation plan to meet the County greenhouse gas reduction targets;
4. implement the plan;
5. monitor and review progress; and

Further **Resolved**, that County agencies and associated entities will use a collaborative cross-agency approach to develop and implement plans to contribute to the successful achievement of County greenhouse gas reduction targets and to prepare for future effects of global warming; and

Further **Resolved**, that the County Administrator's Office will provide administrative oversight for this effort and will establish the cross-agency Sustainability Executive Committee herein after referred to as the Executive Committee and the cross-agency Climate Action Team herein after referred to as the Team; and

Further **Resolved**, that the Executive Committee shall be chaired by a designee of the County Administrator and composed of Agency Directors and Department Heads, shall provide strategic direction for the Team, shall approve the greenhouse gas reduction targets and implementation plan, shall commit necessary resources to achieve the goals of the implementation plan, shall eliminate barriers to implementation, shall set intervals to repeat the emissions inventory, and shall report to the Board of Supervisors annually on the status of County climate change protection and adaptation; and

Further **Resolved**, that the Team shall consist of designees from County agencies and associated entities, shall convene within 6 months of the signing of this Resolution, shall meet at regularly scheduled intervals as needed to progress through the milestones expeditiously, shall recommend reduction targets and agency progress reporting deadlines to the Executive Committee, shall develop guidelines and necessary policies to support agencies and associated entities in meeting the County targets, shall facilitate cross-agency coordination, and shall seek the participation as appropriate of internal and external stakeholder groups; and

Further **Resolved**, that agencies and associated entities should actively participate in meeting the County reduction targets; and

Further **Resolved**, that global warming mitigation and adaptation strategies will be integrated into key County processes and planning such as General Plans, agency strategic plans or the equivalent, capital planning, budgeting, and training when possible or appropriate; and

Further **Resolved**, that global warming will be an on-going focus of the County of Alameda, who will be sharing urgent concerns and key learnings with businesses, the public, and other government agencies; and

Finally **Resolved**, that the County of Alameda forwards this Resolution, and encourages other local governments throughout the United States to adopt a similar resolution.

PASSED AND ADOPTED by the Board of Supervisors of the County of Alameda, State of California this sixth day of June, Two Thousand and Six.

Keith Carson, President
Supervisor, 5th District

Scott Haggerty, Vice-President
Supervisor, 1st District

Gail Steele
Supervisor, 2nd District

Alice Lai-Bitker
Supervisor, 3rd District

Nate Miley
Supervisor, 4th District

ATTEST:

R B Curley, Deputy
Clerk, Board of Supervisors

APPROVED AS TO FORM:

County Counsel

ATTACHMENT A

RESOLUTION NO. 2007-366

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA TO SIGN U.S. COOL COUNTIES CLIMATE STABILIZATION DECLARATION

BE IT RESOLVED by the Board of Supervisors of the County of Alameda:

Whereas, the Board of Supervisors adopted Resolution R-2006-204 Establishing County Climate Change Leadership Strategy in June 2006;

Whereas, the President of the Board joined 11 other pioneering counties in the launch of the U.S. Cool Counties Climate Stabilization Declaration at the National Association of Counties Annual Conference on July 16, 2007, in Richmond, Virginia;

Whereas, Alameda County has a unique opportunity to lead a regional effort on global warming, and the Board has extended an invitation to all 57 other counties in California to sign the Cool Counties Declaration;

Whereas, the Cool Counties initiative seeks to marshal the resources of all 3066 counties across the nation to address the challenges global warming poses to our communities and develop a stronger voice to urge the federal government to realign national energy, transportation, land use, forest conservation, building, waste reduction and recycling, and agriculture policies to stimulate new and existing clean technologies on a large scale;

Whereas, Cool Counties signatories will work cooperatively to disseminate best practices information and develop guidelines for the role of counties in climate protection which take advantage of their unique position and powers;

Whereas, the State of California is currently determining the mechanisms to meet AB 32: Global Warming Solutions Act mandates, including reducing statewide emissions to 1990 levels by 2020 (25% below business as usual), and

Whereas, Bay Area regional agencies under the auspices of the Joint Policy Committee are currently developing a set of initiatives for collective regional action on climate change;

NOW, THEREFORE BE IT:

Resolved, that the County of Alameda supports the U.S. Cool Counties Climate Stabilization Declaration;

Further **Resolved**, that the County of Alameda will work with the National Association of Counties Climate Protection Program to share best practices;

Finally **Resolved**, that the County of Alameda encourages the other 57 counties throughout California to adopt a similar resolution.

PASSED AND ADOPTED by the Board of Supervisors of the County of Alameda, State of California this 31st day of July, 2007.

AYES: Carson, Lai-Bitker, Miley, Steele & President Haggerty - 5

NOES: None

ABSENT: None

ATTEST:

R. Bailey, Deputy
Clerk of the Board of Supervisors

I do hereby certify that the foregoing resolution
Was passed and adopted by the Board of Supervisors
Of the County of Alameda on the 31st day of July,
2007, by the foregoing vote.

APPROVED:

Approved as to Form
Richard E. Winnie, County Counsel

By

U.S. Cool Counties Climate Stabilization Declaration

WHEREAS, there is a consensus among the world's leading scientists that global warming caused by human emission of greenhouse gases is among the most significant problems facing the world today;

WHEREAS, documented impacts of global warming include but are not limited to increased occurrences of extreme weather events (i.e., droughts and floods), adverse impacts on plants and wildlife habitats, threats to global food and water supplies – all of which have an economic impact on communities and their local governments;

WHEREAS, leading scientists have projected that stabilization of climate change in time to minimize such impacts will require a reduction of global warming emissions to 80 percent below current levels by the year 2050;

WHEREAS, currently the United States is responsible for producing approximately 25 percent of the world’s global warming pollutants;

WHEREAS, many leading U.S. companies that have adopted greenhouse gas reduction programs to demonstrate corporate and operational responsibility have also publicly expressed preference for the federal government to adopt precise and mandatory emissions targets and timetables as a means by which to provide a uniform and predictable regulatory environment to encourage and enable necessary and long-term business investments;

WHEREAS, state, regional and local governments throughout the United States are adopting emissions reduction targets and programs and that this effort is bipartisan, coming from Republican and Democratic leadership;

WHEREAS, the U.S. Conference of Mayors has endorsed the U.S. Mayors Climate Protection Agreement, which commits cities to reduction of global warming emissions to 7 percent below 1990 levels by 2012, and calls for a federal limit on emissions;

WHEREAS, the State of California has mandated statewide reduction of greenhouse gas emissions to 80 percent below 1990 levels by 2050;

WHEREAS, more than 100 county leaders signed a letter written by Dane County, Wisconsin, that was sent to the President in March 2006 calling for increased energy investment and development of jobs focused on clean energy technologies;

WHEREAS, counties have a unique role to play in reducing greenhouse gas emissions and preparing for the impacts of climate change through their regional jurisdiction over policy areas such as air quality, land use planning, transportation, zoning, forest preservation, water conservation, and wastewater and solid waste management;

WHEREAS, the economic arguments for implementing climate solutions are compelling, from the near-term economic gains of energy efficiency to the long-term climate stabilization that can prevent irreparable harm from catastrophic climate change impacts;

WHEREAS, many counties throughout the nation, both large and small, are reducing global warming pollutants through programs that provide economic and quality of life benefits such as reducing energy bills, preserving green space, implementing better land use policies, improving air quality, promoting waste-to-energy programs, expanding transportation and work choices to reduce traffic congestion, and fostering more economic development and job creation through energy conservation and new technologies;

NOW, THEREFORE WE DECLARE,

We as Cool Counties will take immediate steps to help the federal, state, and our governments within our county to achieve the 2050 climate stabilization goal by making the following commitments:

i. Create an inventory of our county government (operational) greenhouse gas ("GHG") emissions and implement policies, programs and operations to achieve significant, measurable and sustainable reduction of those operational GHG emissions to help contribute to the regional reduction targets as identified in paragraph ii;

ii. Work closely with local, state, and federal governments and other leaders to reduce county geographical GHG emissions to 80 percent below current levels by 2050, by developing a GHG emissions inventory and regional plan that establishes short-, mid-, and long-term GHG reduction targets, with recommended goals to stop increasing emissions by 2010, and to achieve a 10 percent reduction every five years thereafter through to 2050.

iii. Urge Congress and the Administration to enact a multi-sector national program of requirements, market-based limits, and incentives for reducing GHG emissions to 80 percent below current levels by 2050. Urge Congress and the Administration to strengthen standards by enacting legislation such as a Corporate Average Fuel Economy ("CAFE") standard that achieves at least 35 miles per gallon (mpg) within 10 years for cars and light trucks.

We will take immediate steps to identify regional climate change impacts; we will draft and implement a county plan to prepare for and build resilience to those impacts.

RESOLUTION NO. 2010-170

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA ADOPTING COMMITMENTS TO CLIMATE PROTECTION, CLIMATE ACTION PLAN, AND GREENHOUSE GAS EMISSIONS REDUCTION TARGETS FOR GOVERNMENT SERVICES AND OPERATIONS

BE IT RESOLVED by the Board of Supervisors of the County of Alameda:

Whereas, the County of Alameda has a long history of taking action to preserve natural resources for current and future generations and is committed to sustainability; and

Whereas, global climate change is one of the most significant threats facing the County and will affect the County government's ability to deliver services including fire protection and other emergency services, flood control and public works projects, and health care and social services for vulnerable populations; and

Whereas, by acting now to reduce greenhouse gas (GHG) emissions, the County can reduce the severity of these impacts as well as reduce operating costs and encourage ever more efficient service delivery by increasing energy efficiency, reducing fossil fuel use, and implementing cleaner technologies; and

Whereas, recognizing the magnitude of the challenges posed by global climate change as well as the opportunity provided to continually modernize government services, the Board of Supervisors adopted Resolution R-2006-204 establishing County Climate Change Leadership Strategy on June 6, 2006; and

Whereas, recognizing the importance of counties' regional leadership on this issue, the Board of Supervisors adopted Resolution R-2007-336 on July 31, 2007, making Alameda County one of the lead national signatories of the Cool Counties Climate Stabilization Declaration; and

Whereas, these Resolutions commit the County to take a leadership role in reducing GHG emissions in Alameda County 80% by 2050; collaborate across agencies and jurisdictions to reduce emissions; contribute to the 80% reduction target by achieving significant reduction of emissions from government operations; consider climate change and its impacts in budgets, plans, and other processes; and develop a Climate Action Plan to meet the County's GHG reduction targets; and

Whereas, Alameda County's Strategic Vision, adopted on November 18, 2008, directs the County to ensure that operations and services are consistent and comprehensive in prioritizing environmental protection;

Whereas, to fulfill these directives, the Alameda County Commitments to Climate Protection (Attachment A) and the *Alameda County Climate Action Plan for Government Services and Operations* (the Climate Action Plan) were developed through a two-year collaborative process involving all County agencies, under the oversight of the Climate Executive Committee established by R-2006-204; and

Whereas, many of the specific actions and strategies recommended in the Climate Action Plan are already in place or under development, such as cross-agency climate action teams and agency green teams, green information technology initiatives, environmentally preferable purchasing, Green Building Ordinances, building energy-efficiency projects, renewable power installations, sustainable fleet programs, and urban forestry program; and

Whereas, climate protection actions contribute substantially to the achievement of many of the County's and region's highest priority goals, including: energy security and cost reduction; mobility and transportation choices; clean air; solid waste reduction and recycling; reliable and affordable water supply; forest and wetland protection; sustainable economic development; and

Whereas, carrying out the Commitments and implementing the Climate Action Plan will encourage wise investments of taxpayer dollars to create long-term savings, keep dollars in our local economy, support new green jobs, improve air quality, and attract and retain dedicated public servants, ultimately supporting improved quality of life for County residents.

NOW, THEREFORE BE IT:

Resolved, that the County of Alameda establishes 16 Commitments to Climate Protection for government services and operations (Attachment A) to provide a common vision and high-level policy direction for the actions the County will take over the next decade to invest in its future; and

Further **Resolved**, that the County of Alameda adopts and will implement the *Alameda County Climate Action Plan for Government Services and Operations*; and

Further **Resolved,** that the County of Alameda sets targets to reduce GHG emissions from government services and operations at least 15 percent below 2003 levels by 2020 and 80 percent below 2003 levels by 2050; and

Further **Resolved**, that the Board of Supervisors will continue to provide strategic direction through policy directives necessary to fulfill the County's 16 Commitments to Climate Protection and to implement the Climate Action Plan and will consider the allocation of resources for accomplishing specific initiatives, where needed; and

Further **Resolved**, that the Climate Executive Committee will continue to provide leadership and guide implementation, set priorities, develop the scope of work, identify resources, and monitor progress;

Further **Resolved**, that the Board of Supervisors directs all County agencies to immediately begin implementation of the actions identified in the Climate Action Plan by examining their operations and selecting measures to implement; coordinating with other agencies taking similar actions; and participating in – or leading – Countywide initiatives; and

Further **Resolved**, that individual employees will identify opportunities to develop creative solutions to reduce GHG emissions, support Countywide and agency programs, and take action to reduce emissions;

Further **Resolved**, that the Climate Executive Committee shall provide a report to the Board of Supervisors and the public annually on progress in implementing the *Alameda County Climate Action Plan for Government Services and Operations* and recommendations to improve implementation; and

Further **Resolved**, the Climate Action Plan will be reviewed and updated periodically to take advantage of the most current information and technologies; and

Finally **Resolved**, that climate protection will be an on-going focus of the County of Alameda, which will lead by example and share key learnings with businesses, the public, and other government agencies.

PASSED AND ADOPTED by the Board of Supervisors of the County of Alameda, State of California this 4th day of May, 2010.

Alice Lai-Bitker, President
Supervisor, 3rd District

Scott Haggerty
Supervisor, 1st District

Gail Steele
Supervisor, 2nd District

Nate Miley, Vice President
Supervisor, 4th District

Keith Carson
Supervisor, 5th District

ATTEST:
Clerk of the Board of Supervisors

APPROVED AS TO FORM:
County Counsel

The FOREGOING was PASSED and ADOPTED by a majority vote of the Alameda County Board of Supervisors this 4th day of May, 2010, to wit:

AYES: Carson, Haggerty, Steele, Miley, Lai-Bitker - 5

NOES: 0

EXCUSED: 0

ATTACHMENT A

Alameda County Commitments to Climate Protection

In order to promote climate protection and advance the County's efforts towards achieving its greenhouse gas emissions reduction goals for government services and operations, the County of Alameda commits to the following:

Climate Protection Leadership

1. Establish a directed cross-agency climate team to coordinate and guide the implementation of greenhouse gas reduction measures.

2. Develop performance-based sustainability indicators and provide the Alameda County Board of Supervisors with regular updates on progress towards meeting the County's climate protection goals.

3. Integrate full-cost financial analysis and greenhouse gas considerations into the County's capital planning and budget processes; decisions surrounding master planning and the location of government services; and operational policies, plans, and decisions.

4. Conduct a review of policies, programs, and procedures to remove barriers to climate protection efforts and ensure that employee participation in these efforts is convenient and efficient.

Cross-cutting Strategies

5. Develop a Countywide employee education and communications strategy on climate change and incorporate climate protection into the County's public education and outreach programs.

6. Establish a comprehensive integrated purchasing policy that considers the environmental impacts of the manufacturing, use, transport, and disposal of products.

7. Advance an accessible, technologically innovative, government service model that features green IT, electronic record keeping and service delivery, and virtual meeting and workspace technologies.

Built Environment

8. Reduce water use 20% by 2020 through implementing a comprehensive efficiency strategy for facilities and irrigation systems.

9. Increase the total share of renewable power being used by the County to 40% by 2020.

10. Establish an energy use reduction strategy to implement the behavior changes required for energy conservation as well as necessary equipment and operational efficiencies.

11. Update the County's green building policies to ensure use of the latest environmental standards for materials and systems in all owned and leased facilities, new construction, and renovations.

Transportation

12. Implement a comprehensive suite of green fleet policies and programs to promote efficiency, alternative fuels, and the infrastructure needed to promote alternative travel modes.

13. Shift 20% of County employees' commute trips from "drive alone" to other options by 2017 through advancing policies and programs that encourage alternative commute options and work arrangements.

Solid Waste

14. Meet the County's 75% waste reduction goal, and develop an implementation and outreach plan that strives to achieve "zero waste" at County facilities by 2020 through paper reduction, waste prevention, and waste diversion programs.

Beyond Reductions

15. Take advantage of opportunities to capture and store carbon on County property and throughout the unincorporated communities (e.g., tree cover, wetlands, and salt ponds).

16. Convene a climate adaptation workgroup to assess the County's vulnerability to climate change and develop recommendations to minimize those risks.

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APPENDIX B: ACTION AT ALL LEVELS OF GOVERNMENT

Alameda County's actions to reduce greenhouse gas (GHG) emissions will not take place in a vacuum. The emissions reduction measures identified in *the Alameda County Climate Action Plan for Government Services and Operations* (the Plan) support an ambitious suite of climate protection programs being launched at all levels of government. Taking action will help to maintain the County's position as a leader in the environmental community and place it in a position to influence climate policy at the local, regional, state, national, and international levels.

This appendix contains an overview of the relevant climate protection policies and actions at key levels of government that influence Alameda County's emissions reduction efforts.

LOCAL ACTION

The County is part of a growing number of local governments taking action to reduce greenhouse gas emissions. More than 1,000 city and county governments in the United States have pledged to take similar actions to reduce their greenhouse gas emissions and fight climate change.[144]

In December 2006, the Alameda County Administrator and mayors from all 14 cities within Alameda County met at *Summit 2016* to discuss local and global issues and trends. Global climate change was identified as a top priority for collaborative local action. During the same period, the County and cities joined the Alameda County Climate Protection Project. Through this project (launched by the Alameda County Conference of Mayors in partnership with StopWaste.Org), the participants agreed to an ongoing, coordinated effort to reduce the emissions that cause global climate change as well as improve air quality, reduce waste, cut energy use, and save money. Each of the participating jurisdictions completed their baseline emissions inventories and embarked on processes to develop climate action plans to reduce local GHG emissions.

In January 2009, the County co-hosted the Alameda County & Cities Climate Forum to promote strategic action, build partnerships, and share information. Over 175 representatives attended from local, regional, and state levels. Participants continue to work together in cross-jurisdictional teams focusing on key action areas, such as energy efficiency, public outreach, transportation, and waste reduction. Teams work on specific projects best addressed by a regional effort, such as collaborative grant applications and electric vehicle infrastructure.

[144] U.S. Conference of Mayors Climate Protection Center, available at www.usmayors.org/climateprotection/map.asp.

STATE ACTION

The *Global Warming Solutions Act of 2006* (AB32) requires a statewide reduction in GHG emissions to 1990 levels by 2020, and Executive Order S-3-05 established a long-range target of reducing statewide GHG levels to 80% below 1990 levels by 2050.

The State's strategy for achieving the GHG reductions required by AB32 was outlined in its Climate Change Scoping Plan. Although the Scoping Plan does not contain specific mandates for local governments, it does make the strong recommendation that cities and counties take steps to reduce GHG emissions 15% by 2020. Additionally, many of the strategies included in the Scoping Plan will affect local governments and their communities (e.g., energy and water efficiency measures, regional transportation-related goals). The Scoping Plan also recognizes the important role local governments play in determining land use, accommodating population growth, and influencing emissions from transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas.

The State has also adopted rules, regulations, and policies designed to reduce GHG emissions through actions as diverse as:

- Adding GHG emissions to California's existing motor vehicle emissions standards;
- Establishing a standard to reduce the carbon intensity of transportation fuels by 10%;
- Aligning transportation planning, GHG reduction, land use, and housing allocation efforts;
- Requiring regions to adopt a Sustainable Communities Strategy;
- Requiring that at least 33% of the electricity that utility companies sell comes from renewable sources by 2020;
- Including climate change in the California Environmental Quality Act (CEQA) analysis; and
- Adopting a statewide Green Building Code.

It should also be mentioned that the Bay Area Air Quality Management District has a program to reduce impacts from air pollutants and reduce GHG emissions. These programs promote energy efficiency, reductions in vehicle miles driven in the region, and the development of alternative sources of energy. The Air District also financially supports climate protection programs, provides public education and outreach, offers technical assistance to local governments, and promotes collaboration among stakeholders.

FEDERAL POLICY

Although the United States government has not pursued a comprehensive GHG reduction strategy, a number of regulations have come into effect in recent years – especially relating to research into alternative energy sources. The *Energy Independence and Security Act of 2007* raised the fuel-efficiency standard for passenger vehicles and light trucks, and bills have been introduced in both the House and Senate calling for caps on GHG emissions. In 2009, the U.S. Environmental Protection Agency announced that it considers greenhouse gases a concern to public health and that GHG emissions will be regulated under the Clean Air Act. In early 2010, President Obama issued an executive order that will reduce the federal government's emissions 28% by 2020. The President is also advocating for a national reduction of 17% over the same time period. In light of this recent activity and increased public support for climate protection, it is assumed that the next decade will see more significant federal action.

INTERNATIONAL EFFORTS

In response to the threat of climate change, the United National Framework Convention on Climate Change was drafted in 1992 committing the 192 signatory countries (including the United States) to reducing atmospheric concentrations of greenhouse gas emissions. The Kyoto Protocol arose from this Convention as an international effort to coordinate mandatory reductions in greenhouse emissions to achieve atmospheric levels of 7% lower than in 1990 by 2012. This Protocol went into effect in February 2005. The United States, however, was one of only three industrialized countries that chose not to sign. In December 2009, the participants in the U.N. process met in Copenhagen, Denmark to craft a successor to the Kyoto protocol. Although an agreement was not reached, significant discussions took place, and movement may have been made towards the future adoption of an agreement for a coordinated international GHG reduction effort.

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APPENDIX C: EXAMPLES OF ALAMEDA COUNTY'S CURRENT INITIATIVES

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) builds on the County's long history of taking action to improve its environmental sustainability and reduce the greenhouse gas (GHG) emissions associated with its operations and service delivery. Additional information on these efforts can be found at www.acsustain.org.

This appendix contains overviews of the programs the County has undertaken to reduce greenhouse gas emissions for its operations; the partnership projects the County has initiated to advance climate protection regionally; and some of the many actions County agencies are taking to improve the environmental performance of their operations.

Some of the successful environmental programs the County has implemented in recent years have included:

- Purchasing more than $20 million annually in goods, such as furniture, computers and paper, which meet rigorous environmental specifications;
- Adopting a green building ordinance requiring that County facilities meet minimum environmental standards (i.e., a Silver level rating in the U.S. Green Building Council LEED® program);
- Installing 10 solar power systems at County facilities that generate approximately four million-kilowatt-hours of electricity annually, more than any local government in the nation;
- Installing a one-megawatt natural gas fuel cell plant at the County jail, as part of a clean energy and energy efficiency program that saves hundreds of thousands of dollars;
- Completing energy-efficiency retrofits throughout the County, including a $1.7 million lighting retrofit in 52 owned or leased buildings;
- Installing water-efficient fixtures in County facilities;
- Use water-wise landscaping practices such as smart irrigation and drought-tolerant planting;
- Purchasing more than 110 gas-electric hybrid and other high-efficiency and alternative fuel vehicles for County fleet;
- Piloting the use of a range of advanced technology vehicles (e.g., recycled vegetable oil, electric);
- Using blend of 20% biodiesel as the standard in diesel fuel vehicles;
- Adopting a resolution with the goal of diverting 75% of the waste generated by the County away from landfills;
- Operating programs to reduce, reuse, recycle, and compost, including office recycling programs (e.g., paper, bottles and cans, batteries, toner cartridges), reusing used equipment and furniture, and recycling construction debris;
- Restoring wetlands and urban creeks to reduce flooding and provide habitat; and
- Planting street trees as part of an urban forestry program.

Partnership projects the County has undertaken to promote climate protection in the region and state include:

- Joining the Alameda County Climate Protection Project to launch an ongoing, coordinated effort with all the cities within Alameda County to reduce greenhouse gas emissions, improve air quality, reduce waste, cut energy use and save money;
- Meeting with the mayors from all 14 cities within its boundaries at the Summit 2016 to discuss local and global trends – climate change was identified as a top priority;
- Sending a letter from the President of the Board of Supervisors to the 57 other counties within California encouraging them to sign the *Cool Counties Climate Stabilization Declaration*; and
- Hosting a climate forum (with over 175 attendees from all levels of government) to promote strategic action, build partnerships, and share information – participants continue to work together in cross-jurisdictional teams focusing on key action areas.

Table 20 provides a sample of the GHG reducing actions currently being undertaken by County agencies. The contents of the list are based on interviews, meetings, and phone conversations with the Agency Climate Coordinators and other County employees. These climate protection actions were identified during the development of the *Alameda County Climate Action Plan for Government Services and Operations*. This is not a comprehensive list of what agencies are doing; the measures chosen for inclusion are ones that were considered to be replicable across the County.

TABLE 20: SUMMARY OF REPLICABLE AGENCY BEST PRACTICES FOR GREENHOUSE GAS REDUCTIONS

Agency	Practices
Assessor	• Records kept of the mileage associated with the use of personal vehicles for business travel • Systems developed to track the use of their enhanced Internet site • Significant paper reduction since the launch of an improved website to provide information and forms
Auditor	• Quite a few employees take advantage of the compressed schedule (9/80) • Central Collections Division implemented a system for debtors to make credit card payments through the Internet • Enhanced Clerk-Recorder's website allows customers to conduct business without visiting the office
Child Support Services	• Online vehicle reservation system increases efficiency • Staff organized multi-stream recycling (including plastic) provides additional recycling opportunities • Green page on their departmental Intranet includes recycling information and other environmental tips
Community Development	• Formal motor vehicle purchasing policy with a green vehicle section • Telecommuting plan in place • Planners have reduced vehicle trips (~50%) through using online resources to view properties
County Administrator	• Starting to provide digital packets for Board and commissions and printing documents double-sided • Eliminating bottled water at commission meetings
County Counsel	• Durable/reusable dishes and utensils provided in break area • Replacing the current drinking water cooler and dispenser with a cooling and filtering system that eliminates water jugs, is less expensive, and has been employee-initiated and -funded through a Water Club
District Attorney	• Electronic document filing becoming more commonplace as more courts accept or require this practice • Multi-agency approach to service delivery and one-stop locations where agencies co-locate is gaining traction (e.g., Family Justice Center) • Some video-conferencing being used (to interview witnesses at Santa Rita) • Facility greening – half their Courthouse offices have double-pane glass (and the chairs in lobby are reused from the old jury room)
Fire	• New staffing schedules (48-hour shifts as opposed to 24-hour shifts) eliminate a significant number of commute trips – fuel savings were calculated • Emergency response and training reports are filed electronically • Many employee trainings are provided online

General Services	• Reduced toxics, waste, and energy used through green cleaning and integrated pest management • Hosted a Green IT symposium for all County agencies IS staff; convened an interagency sustainable IT workgroup; and has adopted efficiency standards and settings • Agency Green Team assists in greening events, conducting staff outreach, and developing green policies and guidelines • Provides support to Countywide green efforts through policies, technical assistance, and integrating sustainability into operations
HCSA – Environmental Health	• Telecommuting and a four-day compressed work schedule offered (in some divisions) • Environmentally Preferable Purchasing and Green Events Guidelines developed • Active Green Team, which (among other things) runs an onsite composting program • Office is a recognized Green Business
Human Resource Services	• Allows a 9/80 compressed work schedule and a teleflex program for employees • An HRS Sustainability Initiative is being developed which their Leadership Team is coordinating with staff • Digital work environment advanced o New version of NeoGov database interacts with other databases allowing for online approvals and reporting to other departments o Pay stubs (for direct deposit) distributed electronically o Job applications can be filed online o Working to digitally image documents • The Conference Center is piloting a program for online staff training for mandatory classes
Information Technology	• The View Direct system has significantly reduced paper use by allowing electronic access to documents • Enhanced web development and bandwidth capabilities to assist departments in improving online service delivery opportunities • Major facility efficiency upgrades, including new chillers cooling tower and pumps
Library	• Bookmobile provides services throughout the County, bringing services close to residents • Strategic visioning process will formalize the agency's commitment to greening the library • New Castro Valley Library is close to transit, reuses greywater, has waterless urinals, and restored the Castro Valley Creek. A LEED Silver rating is anticipated. • Incorporating environmental topics into their ongoing Library programs
Probation	• Many employees are either using flexible schedules or telecommuting part of the time • System to digitize documents and an online system for sending reports to the District Attorney's office • Meeting and training video-conferencing capabilities at 400 Broadway, Hayward, Eastmont, Fremont, and the JJC • Capabilities to conduct video interviews with inmates at Santa Rita Jail • Converting forms from hard copy to templates online

Public Defender	• Video-conferencing system for conducting interviews with clients in Santa Rita Jail, facilities at the Lakeside & Fremont, Hayward offices • Large number of staff commuting by transit, transit benefits publicized to all staff
HCSA – Public Health	• Engaged in efforts to include public health considerations into the State's climate protection plans • Actively working to integrate public health repercussions into local and regional planning processes and decision making
Public Works	• Policy to purchase hybrid vehicles • Led a commuter survey for their multi-agency campus and are considering offering a BART shuttle • System being set up to monitor and inventory agency green practices annually • Electronic time card system will be implemented by 2010 • Online vehicle reservation system
Registrar of Voters	• Signs on the copiers to promote double-sided printing • Radio Frequency ID tags automatically track sensitive materials being checked out and returned on election day • High speed document imaging used to scan bar codes on voter lists, read signatures, link electronic signature to each document, and compare signatures between documents – saving hundreds of hours in staff time
Sheriff	• Some deputies use bicycles for specific applications • Wireless reporting systems in the cruisers allows deputies to file reports electronically from the field – it also creates a detailed audit trail
Social Services	• Commissioned a mobility survey to develop recommendations for a telecommuting program • Electronic case file storage – files digitized and available online allowing for a decrease from 100,000 square feet of storage to 25,000 square feet • First of its kind (in Social Services) online intelligent data warehouse, which allows them to see clients across programs (e.g., health care, child welfare, and probation)

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APPENDIX D: METHODOLOGY NOTES

This appendix contains a description of the process of developing the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan). The sections below include key stakeholders, sources of data and information, an overview of the Plan's development process, and a description of the process used to prioritize the greenhouse gas (GHG) reduction measures.

KEY STAKEHOLDERS

The Plan could not have been completed without the input and insight of key stakeholders and contributors such as:

Climate Executive Committee

- **County Administrator's Office (CAO):** Susan S. Muranishi, County Administrator
- **Community Development Agency (CDA):** Chris Bazar, Director
- **General Services Agency (GSA):** Aki K. Nakao, Director
- **Public Works Agency (PWA):** Daniel Woldesenbet, Director

Climate Action Team

- **Community Development Agency:** Jamie Benson, Darryl Gray, Jim Gilford, Cindy Horvath, Bruce Jensen, Carole Kajita, Howard Lee, Albert Lopez, Elizabeth McElligott
- **General Services Agency:** Ryan Bell, Carolyn Bloede, Emily Sadigh
- **Public Works Agency:** Kwablah Attiogbe, Jim Browne, Nanci Erven-Collins, Justin Laurence, Lourdes Lupe Serrano

Agency Climate Coordinators[145]

- **Assessor**: Kathy Vaquilar
- **Auditor-Controller**: Sabrina Amador
- **Child Support Services**: Sandee Rosenberg
- **Community Development**: Donna Eoff
- **County Administrator**: Mona Palacios
- **County Counsel**: Becky Taylor
- **District Attorney**: David Budde
- **Fire Department**: Charles Palmer, Alan Evans
- **General Services**: Ryan Bell
- **Health Care Services:** Pam Evans, Mona Mena
- **Human Resource Services**: Lilybell Nakamura, Ray Johnson
- **Information Technology**: Charles Johnson
- **Library**: Tiona Smith
- **Probation**: Marilyn Adamson, John Keene, Jila Hicks
- **Public Defender**: Anayat Mehrabi
- **Public Works**: Kwablah Attiogbe, Nanci Erven-Collins
- **Registrar of Voters**: Benita Cox
- **Sheriff's Office**: Don Buchanan
- **Social Services**: Dina Brockman, Don Edwards

[145] Multiple names indicate instances where individuals shared responsibilities, the original Climate Coordinator was replaced, or where agencies appointed representatives from several departments.

County Employees

The GSA Sustainability Program oversaw the development of the Plan and climate action framework, coordinated the cross-agency planning process, completed the analysis, and authored the Plan.

Additional data, information and guidance were provided by subject area experts from the following divisions, departments, agencies, groups, and organizations:

GSA

- Administrative Services
- Building Maintenance
- Energy Services
- Communications
- Information Services
- Janitorial Services
- Property and Salvage
- Real Property
- Technical Services
- Transportation Services

PWA

- Environmental Section
- Fleet Administration
- Pump Stations & Flood Control
- Street Lighting / Traffic Safety
- Development Services

CDA

- Planning Department
- Consultants for the Unincorporated Areas Climate Action Plan

Other County

- Climate Action Staff Team
- Information Technology Dept.
- GSA Green Team
- Systems Information Group (SIG)

Other

- Climate Coordinators from Oakland, Berkeley, El Cerrito
- Pacific Gas & Electric Company
- ICLEI – Local Governments for Sustainability

Finally, over 500 GHG emissions reduction ideas were contributed by employees from all County agencies. These employees submitted ideas through the County's climate protection Intranet site, at County Health Fairs, in outreach meetings, or via direct contact. The Agency Climate Coordinators also met with staff in their agencies to discuss the Climate Action Plan and gather contributions to this list of emissions reduction ideas. In the end, the input of several hundred employees was incorporated into the Plan.

SOURCES OF DATA AND INFORMATION

In addition to the County specific information provided by the employees and groups mentioned in the previous section, a diverse set of sources were consulted in the process of identifying and quantifying the impacts of the GHG emissions reduction measures included in the Plan. These sources included, but were not limited to:

- County policies and plans, such as the Strategic Vision, Real Estate Master Plan, and agency business plans;
- Existing County programs and reports on their results;
- The State of California's climate action (Scoping) and adaptation plans;
- StopWaste.Org's Alameda County Template Climate Action Plan;
- Climate plans prepared by other jurisdictions and regional agencies;
- Conversations with colleagues in other jurisdictions;
- Best practices guides prepared by non-profits and business groups; and
- Academic research into effective emissions reduction measures.

CLIMATE ACTION PLAN DEVELOPMENT PROCESS OVERVIEW

The information below provides an outline of major activities undertaken in the development of the Plan. This is not an exhaustive list of the steps taken, however, and the timeframes listed are approximations as some activities were started earlier or were completed in subsequent periods.

2006

- Developed the Climate Leadership Strategy Resolution for adoption by the Alameda County Board of Supervisors

2007 – 2009

- Developed the Cool Counties Stabilization Declaration Resolution for adoption by the Alameda County Board of Supervisors
- Secured partial funding for developing the emissions inventory and Climate Action Plan through a grant from the Bay Area Air Quality Management District
- Formed a staff working group to help design and implement the climate planning process
- Completed the greenhouse gas emissions inventory
- Convened the Climate Executive Committee (CAO, CDA, GSA, PWA)
- Secured additional (part-time, temporary) staffing resources
- Reviewed various best practice guides and other jurisdictions' plans
- Conducted an initial round of emissions reduction brainstorming with the Climate Action Team (who in turn led brainstorming sessions within their agencies)

January – April 2009

- Analyzed the results of the emissions inventory to identify priority focus areas for the Plan
- Completed a gap analysis comparing existing County policies and programs with recommendations and best practices from multiple sources
- Hosted the Alameda County & Cities Climate Forum with all 14 cities within Alameda County to discuss state and federal policies and programs, share best practices, and identify opportunities for collaboration
- Developed methodology for developing the Plan and engaging employees and agencies
- Presented the planning approach to 20 agency heads to secure an Agency Climate Coordinator from each agency
- Hosted the first Agency Climate Coordinators workshop, an orientation
- Developed an online toolkit for the Agency Climate Coordinators to use in discussing the climate planning process with their staff and to assist in gathering feedback on suggested emissions reduction measures.
- Conducted one-on-one interviews with the Agency Climate Coordinators (one to two hours each)
- Developed initial list of potential emissions reduction measures

April – June 2009

- Launched an ongoing employee engagement campaign to encourage input into the Plan, including:
  - A climate protection Intranet site with a form for submitting ideas;
  - An article from the County Administrator in the Countywide employee newsletter, the *Courier*;
  - Countywide e-mail announcements; and
  - Tables at the County Employee Health Fairs (fall 2010)
- Continued to refine the initial list of potential emissions reduction measures
- Compiled a list of best practices already being implemented by County agencies that could be replicated by other agencies
- Created an organizational methodology for analyzing and presenting the emissions reduction activities
- Hosted the second Agency Climate Coordinators workshop to review best practices and progress on the Plan
- Began conducting meetings with subject area experts from various County agencies/departments who have expertise in specific areas (e.g., energy efficiency, transportation, lighting) to identify potential emissions reduction measures

July – August 2009

- Compiled the initial list of potential GHG reduction measures
- Developed the structure for organizing the items in the Plan: action areas, strategies, measures, and supporting actions
- Hosted a series of three small group discussion workshops with the Agency Climate Coordinators to review the potential reduction measures
- Conducted a second round of meetings with the subject area experts to get their input into the initial list of measures
- Developed the preliminary proposed measures list based on the input received
- Presented the proposed measures to the Climate Executive Committee and other key agency directors (Health Care Services, Auditor, Assessor, and Information Technology)
- Developed the County's Commitments to Climate Protection that outline the high-level policies, programs, and goals for meeting the County's 2020 emissions reduction targets
- Outlined and began the process for quantifying the costs and benefits associated with the proposed emissions reduction measures
- Continued gathering information from subject area experts and recommendations from employees

September – December 2009

- Provided an update to all agency directors on the Climate Action Plan's progress, structure, and Commitments
- Hosted the third Agency Climate Coordinators workshop and made follow-up calls to discuss the climate protection commitments and methodology for prioritizing the measures
- Staffed tables at the three County Health Fairs to discuss the Plan and gather ideas for emissions reduction measures
- Surveyed each agency (through its Climate Coordinator) on each measure's acceptability to their department/agency, the relative ease or difficulty of implementation in their agency context, and its fit with their agency's existing programs, policies, and plans.

- Undertook an extensive process to quantify the impacts of each GHG reduction measure; these calculations required:
  - Additional interviews with County staff about existing and proposed programs;
  - Research into best practices and the experience of other communities;
  - Gathering methodologies used by other jurisdictions, researchers, and the State;
  - Developing methodology sheets to document assumptions, calculations, and sources
- Developed the methodology for prioritizing the emissions reduction measures
- Scored each measure to determine its priority for implementation
- Hosted the fourth Agency Climate Coordinators workshop to review the final draft list of proposed measures and the results of the prioritization process.

Early 2010

- Finalized the quantification of impacts for each GHG reduction measure and reviewed results with key employees working on related programs
- Reviewed the calculation methodologies and assumptions with the subject area experts
- Conducted an external methodological review with staff from the cities of Oakland and Berkeley who are involved in developing similar climate action plans
- Drafted the Climate Action Plan report and Executive Summary
- Hosted a fifth Agency Climate Coordinators workshop to review the draft Plan and begin discussing its implementation
- Conducted an internal review of the Plan that included:
  - A Department Heads presentation;
  - The Climate Executive Committee and their staff;
  - Key staff members from other agencies/departments
- Presented the climate action framework (Commitments, targets, the Plan) to the Alameda County Board of Supervisors
- Developed the resolution adopting the climate action framework, which was unanimously adopted by the Alameda County Board of Supervisors on May 4, 2010
- Began outreach on the Climate Action Plan and its recommendations to agencies requesting meetings

PRIORITIZING THE GREENHOUSE GAS REDUCTION MEASURES

The Climate Action Plan outlines 80 emissions reductions measures to be implemented by 2020. While all the measures must be implemented, it would not be practical or desirable to start implementing every measure at the same time. It also would not be efficient to undertake an extensive cost-benefit analysis of every measure simply to inform decisions about the general order in which they should be implemented over the next 10 years. Therefore, a streamlined process was developed to divide measures into first, second, and third tiers of implementation and to provide employees with a sense of the relative benefits, costs, and practicality of the 80 measures. This section walks through each step of that process, giving an overview of the criteria and numerical scoring used to arrive at the final rankings.

Prioritization process overview: Basic information on the measures' costs and benefits was obtained and translated into a score. Each measure was scored on eight criteria: GHG reductions; co-benefits; implementation cost; annual savings; staffing level; implementation dependencies; support for existing goal, policies, or plans; and agency fit. This information was

used for two purposes. First, the scores were added, and the highest-scoring measures were prioritized as tier one measures for more rapid implementation, to be followed by tier two and three measures. Second, these eight criteria were grouped into three broad categories, and each measure received a rating in these three categories. These scores were presented in a visual summary using graphic icons in order to provide an easy visual comparison of measures. Below is a description of the steps used in this process.

Step 1: Determine Key Criteria and Categories

Given the goals of the Plan, the ideal measure for early implementation would provide significant GHG reduction benefits compared to the cost of implementation; it would also have a good level of organizational acceptability (that may be uncorrelated with its quantifiable benefits and costs). Using this understanding of what would characterize a top-priority measure, three categories composed of eight criteria were created as a scoring framework.

The first category is GHG Reductions & Co-Benefits. Scoring in this category is based on two criteria: 1) quantifiable GHG reductions and 2) how many additional environmental, social, economic, organizational, or other benefits are expected to the community and County operations. High GHG reductions and many co-benefits results in the highest score.

The second category is Resource Efficiency. This category assesses how resource efficient a measure will be to implement and the anticipated return on the initial investment. Scoring is based on three criteria: 1) costs, 2) savings, and 3) staff time required. High cost savings combined with low staffing needs result in the highest score.

The third category is Practicality. This category provides an indication of a measure's importance to the overall success of the Plan and ease with which it can be implemented. Scoring in based on three criteria: 1) how critical a measure is to enabling other measures to be carried out, 2) fit with exciting County goals and activities, and 3) the degree of local fit as determined by each agency. Alignment with other measures in the Plan, existing County policies, and agency practices results in the highest score.

Step 2: Obtain Quantitative and Qualitative Data

The next step was to compile the information needed on each measure in order to score it on the eight criteria. The primary focus was on developing estimates of the GHG reductions expected from each measure, as discussed in Chapter 2. The co-benefits, costs, savings, and staff time required were estimated using data from other jurisdictions and staff knowledge about similar projects. Implementation dependencies and support for existing goals, policies, and plans were determined using organizational knowledge, including information gained from interviews with each agency. Finally, for agency fit, Agency Climate Coordinators were asked to assign a score of 1 to 5 to each measure based on its acceptability to their department/agency, the relative ease or difficulty of implementation in their agency context, and its fit with their agency's existing programs, policies, and plans. These results were averaged to develop an agency fit score.

Step 3: Score Each Measure from 1 to 5 on Key Criteria

Each measure was scored on a scale of 1 to 5. Across all categories, 5 indicates the most favorable result and 1 the least favorable.

GHG Reductions & Co-Benefits

2020 GHG Reductions: The following scale was used in assigning the appropriate score to the measure's anticipated GHG reductions. Estimates for reductions only include the time period up to 2020:

1 = 0 metric tons CO_2e (for simplicity, GHG reductions were not credited to facilitating measures that lay groundwork for the implementation of other reduction measures)
2 = Less than 10 metric tons CO_2e, or measures with reductions that could not be quantified with any certainty
3 = 10 - 100 metric tons CO_2e
4 = 100 - 500 metric tons CO_2e
5 = > 500 metric tons CO_2e

Co-Benefits: Scores for co-benefits were developed by tallying up the number of co-benefits associated with a measure. The co-benefits considered included:

- Community engagement
- Safety benefits
- Leadership opportunity
- Cost savings for employees
- Improved public health
- New in-house capacity built
- Improved employee morale
- Increased productivity
- Partnerships leveraged
- Communication facilitated
- Other environmental benefits (e.g., local air quality, reduces runoff)

Resource Efficiency

Implementation Cost: The following scale was used to assign the appropriate score to initial cost associated with implementing the measure, including capital, operation, and maintenance costs but excluding staff time:

1 = > $1,000,000
2 = $100,000 – $1,000,000
3 = $10,000 – $100,000
4 = $100 – $10,000
5 = < $100

Annual Savings: The following scale was used to assign the appropriate score to the annual cost savings to the County associated with a measure, primarily ongoing operational savings:

1 = < $100
2 = $100 – $10,000
3 = $10,000 – $100,000
4 = $100,000 – $1,000,000
5 = > $1,000,000

Staffing Level: The following scale was used in assigning the appropriate score for the amount of staff time required to implement the measure:

1 = > 2,080 hrs; or 1 year FTE
2 = 1,040 – 2,080 hrs; 6 months – 1 year FTE
3 = 200 – 1,200 hrs; or 1 – 6 months FTE
4 = 40 – 200 hrs; or 1 week – 1 month FTE
5 = < 40 hrs; or < 1 week FTE

Practicality

Implementation Dependencies: The following scale provides an indication of the number of other actions that have this measure as a prerequisite. The score is takes into consideration both the number and strength of the dependencies (i.e., how critical each action is to the overall implementation of the Plan):

1 = Measure is largely stand-alone and is not crucial to the success of other actions
3 = Measure influences ability to achieve emissions reductions from other actions
5 = Measure critical for the success of the Plan as other measures are dependent on this measure for their implementation

Support for Existing Goals, Policies, or Plans: The following scale was used to assign the appropriate score to how the measures fits with existing County goals, policies, and plans already in place or under consideration:

1 = Measure represents a new area of activity for the County
3 = There is support for the activity or related activities are underway, but no official policy
5 = Measure helps fulfill an existing policy (e.g., the Strategic Vision, 75% Waste Diversion)

Agency Fit: This scale is based on the averaged results from a survey of Agency Climate Coordinators, who assigned a score of 1-5 to each measure based on its acceptability to their department/agency, the relative ease or difficulty of implementation in their agency context, and its fit with their agency's existing programs, policies, and plans.

Step 4: Create Total and Category Scores for Each Measure

The scores (1 to 5) for each of the eight criteria were added to determine a total numerical score for each measure.

Scores for the appropriate combinations of criteria were also added to obtain total numerical scores in each of the three categories.

Step 5: Divide Measures into Priority Tiers

The total numerical score for each measure was then used to group measures by implementation priority. To accomplish this, the measures within each action area were ordered from highest to lowest based on their total score across all eight criteria. Within each action area, the measures were divided, based on their total scores, into groups containing the top third (first tier), middle third (second tier), and bottom third (third tier) of the scores. These tiers correspond to the general order in which the measures will be considered for implementation and will be used to guide decisions on where to focus the County's initial efforts.

The first tier measures will be the first group to be implemented. These measures provide the most favorable balance between maximizing benefits and minimizing costs and other impacts, as well as taking into account importance and ease of implementation. Measures in lower tiers are likely to require additional preparatory work such as identifying resources and gaining stakeholder support before being implemented. When using tiers, it is important to emphasize that rankings can be adjusted as new opportunities arise or the County's priorities shift and that all measures will need to be implemented by 2020 to reach the Board-adopted GHG reduction target.

There are several benefits to sorting measures into tiers within each action area, rather than ranking each of the 80 measures in the Plan relative to all other measures in the Plan. Ranking measures within action areas ensures that all action areas have an equal proportion of first tier measures. This means that action will be initiated in all areas, which will create momentum and reveal unexpected institutional barriers in each area, so that no one action area falls behind. Projects in the same action area may be carried out by one department, which may have limitations on staff time and resources to implement multiple large projects. Therefore, ranking measures within action areas distributes work across departments and groups more evenly. In sum, ensuring first tier measures are balanced across action areas is more likely to result in successful implementation of the Plan.

Step 6: Visually Communicate Results

To provide the reader with an easy visual comparison of measures, icons were selected to be associated with each of the three categories:

GHG Reductions & Co-Benefits (earth)

Resource Efficiency (piggybank)

Practicality (checkmark)

For each measure, the numerical category score was converted into a score from one to three icons (like star rankings for a hotel or restaurant). These are the ratings seen in the measures tables in Chapters 3 to 8. These icons provide users of the Plan with an at-a-glance sense of the relative impact that the measure will have.

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APPENDIX E: LISTING OF THE COMMITMENTS, MEASURES, AND SUPPORTING ACTIONS

This appendix contains Alameda County's Commitments to Climate Protection and the specific greenhouse gas (GHG) reduction measures that will be implemented to fulfill those Commitments and meet the County's 2020 emissions reduction target.

Although these are listed elsewhere in the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan), they have been compiled here for ease of reference. The Commitments and measures are grouped into their corresponding action areas. More details on how these items were developed and prioritized is included in Chapter 2: A Blueprint for Meeting the County's Climate Protection Goals and in Appendix D: Methodology Notes. Details on each of the measures are included in Chapters 3 to 8.

ALAMEDA COUNTY'S COMMITMENTS TO CLIMATE PROTECTION

These Commitments provide a common vision and high-level policy direction for how the County will meet its 2020 emissions reduction target of a 15% reduction in GHG emissions. They lay out the broad structures, goals, and programmatic areas in which actions will occur.

In order to advance its climate protection efforts over the next decade, the County commits to the following:

Climate Protection Leadership

1. Establish a directed cross-agency climate team to coordinate and guide the implementation of greenhouse gas reduction measures.
2. Develop performance-based sustainability indicators and provide the Alameda County Board of Supervisors with regular updates on progress towards meeting the County's climate protection goals.
3. Integrate full-cost financial analysis and greenhouse gas considerations into the County's capital planning and budget processes; decisions surrounding master planning and the location of government services; and operational policies, plans, and decisions.
4. Conduct a review of policies, programs, and procedures to remove barriers to climate protection efforts and ensure that employee participation in these efforts is convenient and efficient.

Cross-Cutting Strategies

5. Develop a Countywide employee education and communications strategy on climate change and incorporate climate protection into the County's public education and outreach programs.
6. Establish a comprehensive integrated purchasing policy that considers the environmental impacts of the manufacturing, use, transport, and disposal of products.
7. Advance an accessible, technologically innovative government service model that features green IT, electronic record keeping and service delivery, and virtual meeting and workspace technologies.

Built Environment

8. Reduce water use 20% by 2020 through implementing a comprehensive efficiency strategy for facilities and irrigation systems.
9. Increase the total share of renewable power being used by the County to 40% by 2020.
10. Establish an energy use reduction strategy to implement the behavior changes required for energy conservation as well as necessary equipment and operational efficiencies.
11. Update the County's green building policies to ensure use of the latest environmental standards for materials and systems in all owned and leased facilities, new construction, and renovations.

Transportation

12. Implement a comprehensive suite of green fleet policies and programs to promote efficiency, alternative fuels, and the infrastructure needed to promote alternative travel modes.
13. Shift 20% of County employees' commute trips from "drive alone" to other options by 2017 through advancing policies and programs that encourage alternative commute options and work arrangements.

Solid Waste

14. Meet the County's 75% waste reduction goal, and develop an implementation and outreach plan that strives to achieve zero waste at County facilities by 2020 through paper reduction, waste prevention, and waste diversion programs.

Beyond Reductions

15. Take advantage of opportunities to capture and store carbon on County property and throughout the unincorporated communities (e.g., tree cover, wetlands, and salt ponds).
16. Convene a climate adaptation workgroup to assess the County's vulnerability to climate change and develop recommendations to minimize those risks.

GREENHOUSE GAS EMISSIONS REDUCTION MEASURES

The emissions reduction measures outline the specific steps the County will take to fulfill the Commitments to Climate Protection and meet its GHG reduction targets. They include long-term and short-term programs and policies for the County to undertake by 2020. The measures are presented as discrete items; however, many of the measures are related to and overlap one another.

The emissions reduction measures have also been analyzed and prioritized based on their individual costs and benefits into first, second, and third priority tiers. This prioritization will help determine where the County should direct its efforts and resources. The implementation of some measures may also require the identification of additional financial resources, further research and analysis, and the involvement of multiple departments and employee organizations. Prior to implementation, the individual measures will go through the County's normal channels for approval and many will undergo additional cost benefit analysis.

The following sections contain the emissions reduction measures related to the six major action areas in which the County will achieve GHG reductions. The measures are further divided into strategies (the highlighted headers). Each row in the tables below represents an individual emissions reduction measure. In some cases, the measure row also contains a list of supporting actions that are examples of steps to take in implementing the measures.

Within each of the tables:

- The left column contains the measure number for easy reference;
- The center column contains the measure's name and any supporting actions;
- The right column contains the priority tier of each measure.[146]

Climate Protection Leadership

This action area contains measures related to the foundational, structural, and long-term policies that will create organizational changes critical for meeting the County's climate protection targets.

Alameda County Commitments to Climate Protection Addressed: 1 - 4

Monitoring and Reporting:

- Tracking the development, adoption, and implementation of the recommended policies and programs; and
- Implementing the measures in the Monitoring and Reporting strategy.

CLIMATE PROTECTION LEADERSHIP – INTERNAL ORGANIZATION		
CPL-1	Establish an ongoing cross-agency climate and sustainability team to guide the County's greenhouse gas reduction activities	1st
CPL-2	Establish a cross-agency Climate Coordinator position to oversee implementation of the Climate Action Plan	2nd
CPL-3	Promote the establishment of agency-level Green Teams	3rd
CPL-4	Incorporate sustainability principles into job duties a. Identify and assess management competencies (e.g., skills, abilities, knowledge) to promote sustainability initiatives b. Review classifications and modify job descriptions to include sustainability duties, as appropriate	3rd

[146] Please note that the measures are prioritized within (not between) action areas, reflecting the need for multiple agencies and departments to take the lead on different types of projects simultaneously.

CLIMATE PROTECTION LEADERSHIP – MONITORING AND REPORTING		
CPL-5	Develop sustainability indicators and internal reporting mechanisms to track progress towards meeting the County's emissions reductions goals and inform the decision-making process a. Develop performance metrics that each agency reports on annually b. Provide agencies and building occupants with regular reports on energy and resource use c. Provide sustainability indicator updates to employees in an accessible format (e.g., online)	1st
CPL-6	Address sustainability in each agency's annual budget process and business plans	2nd
CPL-7	Conduct periodic re-inventories of the greenhouse gas emissions associated with County operations and service delivery	3rd
CPL-8	Produce a sustainability report card for the Board of Supervisors and the public that provides an update on County progress towards meeting its climate protection and sustainability goals	3rd
CPL-9	Develop a County operations database of sustainability initiatives that agencies regularly update with their green practices	3rd
CLIMATE PROTECTION LEADERSHIP – FOUNDATIONAL POLICIES AND PRACTICES		
CPL-10	Develop financial analyses that capture the full costs and benefits of decisions and practices, including lifecycle costs and environmental benefits	1st
CPL-11	Establish funding mechanisms to implement climate protection projects that improve operational or resource efficiencies, generate greenhouse gas reductions, or lead to long-term cost savings	1st
CPL-12	Consider greenhouse gas emissions and climate change impacts when evaluating capital projects	1st
CPL-13	Develop a legislative platform to influence state and federal climate protection discussions	2nd
CPL-14	Evaluate opportunities to reduce greenhouse gas emissions from sources over which the County has influence but not direct control (e.g., purchasing goods and services, investing) a. Consider lifecycle emissions in greenhouse gas analyses b. Assess the greenhouse gas impacts resulting from public access to County services when making decisions on how services are delivered (e.g., paper use, vehicle trips) c. Review the County's investment strategies to identify opportunities to invest with companies that reflect the County's commitment to climate protection and sustainability	2nd
CPL-15	Establish mechanisms to identify and address County polices, programs, and procedures that create barriers to emissions reduction	2nd
CPL-16	Foster local and regional partnerships to maximize the impacts of the County's emissions reduction efforts	3rd

Cross-Cutting Strategies

This action area contains overarching measures that reduce GHG emissions from multiple sources and facilitate the emissions reductions sought in other action areas.

Alameda County Commitments to Climate Protection Addressed: 5 - 7

Monitoring and Reporting:

- Tracking the number of employees contacted through educational and outreach campaigns and the outcomes of that contact;
- Developing an approach for annual reporting on the purchase of selected commodities; and
- Reporting on and sharing best practices annually.

CROSS-CUTTING STRATEGIES – EDUCATION AND OUTREACH		
CC-1	Develop a Countywide employee education and communications strategy on climate change and sustainability to support emissions reduction actions a. Survey employees on their level of knowledge, suggestions for current programs, and needs b. Integrate sustainability into new employee orientations and trainings c. Expand the sustainability Intranet site to create a one-stop-shop for employee green resources d. Develop mechanisms for establishing an ongoing dialogue with County employees on sustainability and greenhouse gas emissions reduction e. Establish a climate protection innovator awards program	1st
CC-2	Incorporate climate protection and sustainability into the County's existing community education and outreach programs (e.g., adult and youth leadership academies, library programs)	2nd
CROSS-CUTTING STRATEGIES – SUSTAINABLE PURCHASING		
CC-3	Establish and implement an integrated purchasing policy that considers the environmental impacts of the manufacture, transport, use, and disposal of products a. Develop product specifications that promote the purchase of resource- and energy-efficient items b. Investigate the feasibility of using lifecycle cost assessments in purchasing decisions c. Consider establishing a price preference for environmental criteria for procurement of goods and services d. Ensure that contractors and vendors apply the County's green purchasing standards to products and services purchased, manufactured, or built in fulfillment of County contracts e. Ensure new equipment is set up with the highest appropriate resource- and energy-efficiency settings f. Work with vendors to minimize the packaging associated with County purchases g. Arrange for vendors and producers to take back and properly dispose of products at the end of their useful life	1st

CROSS-CUTTING STRATEGIES – TECHNOLOGICAL INNOVATION AND COMMUNICATIONS		
CC-4	Standardize green IT efforts across agencies Countywide a. Expand cross-agency communication on green IT opportunities and advancements b. Standardize purchasing specifications for computers c. Develop purchasing standards for electronic equipment (e.g., computer peripherals, printers, copiers, fax machines) d. Establish default settings for all new and existing computers and electronic equipment to maximize efficiency and resource conservation (e.g., power management settings) e. Institute the use of centralized power management software in all agencies	1st
CC-5	Expand efforts to transition to electronic record keeping and service delivery a. Invest in digital document management software and equipment for Countywide use b. Launch a comprehensive standardized records digitization effort c. Coordinate digitization efforts with non-County agencies that make use of County records, filings, and reports d. Conduct an agency-by-agency assessment of opportunities to offer web-based services, and provide online services where appropriate	2nd
CC-6	Transition to technologies that facilitate flexible work arrangements a. Make remote network access (e.g., laptops and network tokens, virtual desktop) standard for employees whose job duties require computer access b. Investigate network virtualization c. Implement virtual workspace technology (e.g., VOIP, soft-phones) as practicable	2nd
CC-7	Promote, and provide training on, virtual meeting technologies a. Modernize, utilize, and share video- and web-conferencing capabilities across agencies b. Provide all agencies with access to teleconferencing equipment either in-house or shared between agencies c. Actively promote the use of tele-, video- and web-conferencing to reduce trips	3rd

CROSS-CUTTING STRATEGIES – GREENING EVENTS AND OPERATIONS		
CC-8	Take steps to green all County-sponsored events (both internal events and public meetings) a. Develop a checklist of green event practices for use throughout the County b. Establish zero waste guidelines for County events (e.g., avoid single-use beverage containers and disposable packaging, dishes, and utensils) c. Locate events close to transit and provide directions for attending via public transportation d. Encourage the provision of locally grown and locally produced food	3rd
CC-9	Pursue official Bay Area Green Business recognition for County agencies, departments, and facilities	3rd

Built Environment

This action area contains measures that reduce GHG emissions from the County's physical infrastructure of buildings and facilities.

Alameda County Commitments to Climate Protection Addressed: 8 - 11.

Monitoring and Reporting:

- Tracking and reporting energy and water use at County facilities;
- Benchmarking building performance and publicizing the results;
- Documenting and reporting renewable power generation and purchases; and
- Tracking and reporting green building practices.

BUILT ENVIRONMENT – EFFICIENCY AND CONSERVATION		
BE-1	Encourage operational and behavioral changes that decrease the demand for energy and water in County facilities a. Issue Countywide guidelines and recommendations on ways employees can maximize energy efficiency through individual actions b. Develop and implement a policy on the use of desktop equipment and personal appliances c. Institute facility walk-throughs at the end of the day to turn off equipment d. Increase participation in peak-load management, demand-response, and smart metering programs e. Provide energy-efficiency training for maintenance staff and employees f. Evaluate building use patterns and work schedules to maximize conservation g. Promote the building maintenance hotline for employee use to report energy and water inefficiencies at County facilities	1st

BE-2	Conduct comprehensive building performance evaluations (retro-commissioning) to ensure major systems (e.g., mechanical, HVAC, lighting, controls) are operating at optimal efficiency a. Perform retro-commissioning on targeted County facilities and implement recommendations b. Assess the feasibility of expanding the retro-commissioning project to include additional facilities c. Develop long-term plan for retro-commissioning all prioritized facilities	1st
BE-3	Implement comprehensive energy reduction measures at the data center and other high-energy-use facilities	2nd
BE-4	Establish a procedure to ensure that County buildings continue to operate at optimal efficiency a. Conduct regular evaluations of building performance and conditions b. Install advanced energy and environmental controls as appropriate c. Provide facility managers with the support they need to maximize building operation efficiency	2nd
BE-5	Tune up or replace inefficient equipment (e.g., boilers, motors) a. Implement boiler audit recommendations b. Continue programs for regular equipment maintenance and upgrading to more efficient models	2nd
BE-6	Continue utilizing efficient indoor lighting strategies in County facilities a. Make use of natural lighting in County facilities b. Continue to implement efficient indoor lighting technologies	2nd
BE-7	Optimize thermostat settings and set a Countywide building temperature standard	2nd
BE-8	Install high-efficiency outdoor area lighting (e.g., streetlight) technologies as practicable	3rd
BE-9	Investigate building envelope (e.g., windows, walls, roofs) upgrades to County buildings to minimize heating and cooling needs a. Assess potential for utilizing cool (highly reflective and emissive) or green roofs on new and existing facilities b. Investigate weatherization opportunities for County facilities (e.g., windows, duct work, insulation)	3rd
BUILT ENVIRONMENT – WATER CONSERVATION		
BE-10	Develop and implement a comprehensive water conservation and efficiency program a. Identify preventive maintenance measures to address water leakage in County facilities and water systems b. Install water conservation devices and efficient fixtures as practical c. Use native plants and low-water landscaping at County facilities d. Utilize the most water-efficient technologies practical where irrigation is needed e. Provide employee outreach and training to promote water conservation through operational and behavioral changes f. Investigate opportunities for utilizing greywater and reclaimed water in new construction and major retrofits	2nd

BUILT ENVIRONMENT – GREEN POWER		
BE-11	Actively expand the County's use of renewable energy to meet the 40% green power target a. Focus on developing new sources of on-site generation b. Investigate potential for green power purchasing c. Purchase green tags or renewable energy certificates as necessary to reach the renewable power target d. Evaluate financial models that enable rapid adoption of renewable energy	1st
BE-12	Investigate the utilization of advanced technology energy systems (e.g., fuel cells, smart grid systems)	3rd
BE-13	Investigate and implement solar thermal water heating as appropriate	3rd
BUILT ENVIRONMENT – GREEN BUILDING		
BE-14	Routinely evaluate, review the effectiveness of, and update the County's municipal Green Building Ordinance to ensure that it meets or exceeds the industry's best practices and progressive standards a. Expand the Green Building Ordinance to apply to built-to-suit (constructed to meet the County's needs as a long-term tenant), leased properties, tenant improvements, and the purchase of existing buildings b. Develop mechanisms to ensure compliance with the Green Building Ordinance's procedures for small projects c. Adopt green building standards for existing facilities (e.g., LEED for Existing Buildings)	1st
BE-15	Develop green lease language for use in the County's standard lease agreement	1st
BE-16	Continue to implement green building practices at Santa Rita Jail a. Implement comprehensive landscaping water conservation at Santa Rita Jail b. Develop a strategy and timeline for the jail to become net zero emissions	1st
BE-17	Set standards for efficient use of facility space a. Consider options for more efficient space utilization in new and existing facilities b. Investigate opportunities for utilizing alternative workspace strategies (e.g., hoteling, leveraged work stations)	1st
BE-18	Develop and integrate technical specifications and standards for green building materials and systems into project design, standard construction documents, and all construction-related contracts	3rd
BE-19	Upgrade and retrofit fire stations with green features	3rd
BE-20	Examine the physical location of County departments and services to reduce employee and customer vehicle travel a. Implement strategies to locate services throughout the County and in proximity to target populations b. Co-locate agencies that work closely together or provide related services c. Make proximity to transit a priority when making infrastructure investments d. Investigate new opportunities for providing distributed services (e.g., e-government kiosks, mobile services)	3rd

Transportation

This action area contains measures that reduce GHG emissions from employees' work-related travel and commute trips.

Alameda County Commitments to Climate Protection Addressed: 12 - 13.

Monitoring and Reporting:

- Surveying County employees about current commute modes and tracking ongoing commute trends;
- Tracking department/agency fleet vehicle use (mileage and fuel consumption) and costs; and
- Tracking mileage and reimbursement costs for the use of personal vehicles for County business.

TRANSPORTATION – NON-MOTORIZED TRANSPORT		
T-1	Promote bicycling and walking as alternatives to single-occupancy vehicle travel to and from County facilities a. Provide outreach on the health benefits of walking and biking b. Provide practical resources to encourage walking and biking (e.g., maps and routes, lists of local services, distances, and travel times between facilities) c. Provide pre-tax commuter benefits for bicycle commuters as allowed by federal law	2nd
T-2	Increase the infrastructure available to facilitate biking and walking as viable options for accessing County facilities a. Arrange for secure bicycle parking for employees at all County campuses or facilities b. Provide public bicycle parking at County facilities c. Create a bicycle fleet for use by County employees in lieu of County vehicles d. Consider options for making showers available in facilities or through local partnerships e. Partner with jurisdictions and agencies to ensure appropriate non-vehicular infrastructure exists to access County facilities (e.g., sidewalks, bike lanes, bus stops)	2nd
TRANSPORTATION – COMMUTER PROGRAMS		
T-3	Develop a comprehensive employee education and outreach strategy on commute alternatives a. Provide comprehensive information on commute alternatives to all employees b. Actively promote existing commuter benefits c. Review current commuter benefits claims and reimbursement system for opportunities to improve and streamline	1st

T-4	Expand employee commuter benefits programs a. Establish a carpool matching service for County employees b. Coordinate with transit providers to provide employees with discount transit passes c. Investigate and provide additional incentives to encourage using transit, biking, walking, and carpooling	1st
T-5	Implement and promote a comprehensive Countywide flexible work program to achieve 20% employee participation within five years a. Develop standardized telecommute, compressed work week, and flextime policies and implementation guidance b. Create guidelines for assessing positions' suitability and performance expectations for participating in flexible work arrangements c. Provide training for managers and supervisors on performance-based staff management in a flexible work environment	1st
T-6	Develop and promote shuttles (or similar services) to connect major County facilities with transit systems a. Assess the opportunity to offer shuttles to County campuses (e.g., JJC and Fairmont, Hayward, downtown Oakland, Santa Rita Jail) b. Explore opportunities to partner with transit providers to expand services to County facilities	2nd
T-7	Adjust parking policies to de-emphasize single-occupancy vehicle commutes a. Offer preferential parking for carpools, vanpools, and alternative fuel and high-efficiency vehicles at all facilities b. Institute parking fees for all public and employee parking provided at County facilities c. Revise the pre-tax parking benefit to emphasize parking at transit facilities	2nd
T-8	Establish a Commute Trip Reduction Coordinator position to develop, monitor, and guide the implementation of a comprehensive commute trip reduction program	2nd
T-9	Develop remote workspaces to facilitate interagency collaboration and minimize business and commute travel a. Provide open workspaces with phones and computers for County employees to use at other County agencies' offices b. Develop relationships with neighboring counties and other jurisdictions to offer remote workspaces for employees	3rd
T-10	Initiate a standard compressed work week schedule (where appropriate) with full building shut-downs	3rd
T-11	Develop a fee-based car-share program that allows personal use of County fleet vehicles for errands or carpooling	3rd
T-12	Investigate opportunities for reducing employee commute distances a. Consider home location when assigning office location b. Research possibilities to make incentives available to minimize vehicle travel between home and work	3rd

TRANSPORTATION – GREEN FLEETS		
T-13	Adopt fleet management policies and standards that promote efficiencies and minimize transportation-related emissions a. Determine the most appropriately sized vehicles to purchase for the intended use b. Purchase the most efficient vehicles within the necessary vehicle size classes c. Investigate opportunities to limit growth in the number of fleet vehicles and retire underutilized fleet vehicles d. Ensure that older and less-efficient vehicles are phased out of the fleet	1st
T-14	Implement advanced fleet management technologies to measure and improve fleet efficiency a. Establish decentralized vehicle pools at County facilities and online reservation systems to improve the efficiency of vehicle usage and minimize the fleet size b. Utilize Global Positioning System (GPS) technology and route efficiency software to minimize fuel use	1st
T-15	Promote alternative travel modes for business travel a. Make transit passes available to employees for use on work trips b. Review County policies to ensure easy reimbursement procedures for employees who use public transportation for County business c. Emphasize rail as an option for regional travel (e.g., to Sacramento)	1st
T-16	Expand the use of high-efficiency and alternative fuel vehicles in all County fleets a. Purchase hybrids or equally efficient vehicles for pool vehicles b. Expand the use of alternative fuels as appropriate (e.g., compressed natural gas, biodiesel blends like B50) c. Integrate electric and plug-in hybrid vehicles into County fleets and expand opportunities for electric vehicle recharging at County facilities d. Utilize non-motorized and electric vehicles for specialized applications and intra-campus travel e. Continue to pilot the use of clean fuel and advanced technology vehicles f. Investigate low-emissions options (e.g., fuels, technologies) for heavy duty and off-road vehicles	1st
T-17	Adopt operational and maintenance best practices to promote vehicle efficiency (e.g., tire inflation, low-friction engine oil)	2nd
T-18	Expand and enforce anti-idling policies on all County vehicles	3rd
T-19	Integrate information on the costs and fuel use associated with using personal vehicles for County business into transportation-related decisions	3rd
T-20	Develop enhanced driver training classes on safety, efficient driving, and alternative fuel vehicles	3rd

Solid Waste

This action area contains measures that reduce GHG emissions associated with waste generation and its disposal in landfills.

Alameda County Commitments to Climate Protection Addressed: 14.

Monitoring and Reporting:

- Conducting regular waste audits of County facilities;
- Tracking waste generation and diversion rates; and
- Tracking and reporting agency-specific paper usage and cost annually.

SOLID WASTE –WASTE PREVENTION AND DIVERSION		
SW-1	Expand programs to divert waste generated at County facilities from landfills a. Provide comprehensive recycling services b. Integrate composting (e.g., food scraps, green waste, other organic materials) into County waste diversion programs c. Increase recycling in public areas at County facilities d. Work with landlords to provide recycling and composting at leased facilities	1st
SW-2	Develop and monitor construction and demolition waste plans for all construction projects	1st
SW-3	Continue to investigate and implement actions to reduce waste generation at detention facilities (e.g., waste sort, recycling, eliminating single-use items)	2nd
SW-4	Increase efforts to prevent waste from being generated at County facilities a. Consider waste generation and end-of-life disposal in purchasing decisions b. Avoid bottled water use in the workplace and provide information on the health and environmental impacts of bottled water c. Promote the use of reusable dishes and cutlery in offices and at meetings d. Replace disposable batteries with rechargeable batteries	2nd
SW-5	Continue and expand the use, reuse, and recycling of materials generated or collected from County-maintained right-of-ways and public spaces a. Recycle appliances, e-products, scrap metals, and batteries collected on County right-of-ways b. Compost or mulch wood chips and leaves c. Recycle asphalt grindings to create road base d. Use recycled paint from Household Hazardous Waste for graffiti abatement	3rd
SW-6	Evaluate opportunities in the County's materials reuse programs to maximize waste diversion and minimize waste generation a. Increase the visibility and accessibility of existing programs (e.g., create online catalog of items available for reuse) b. Investigate opportunities to increase the efficiency of handling hard-to-process items (e.g., cubicle walls)	3rd

SW-7	Advance programs that increase employee participation in the County's waste reduction and diversion efforts a. Minimize or eliminate desk-side garbage bins in favor of central garbage collection b. Provide ongoing waste reduction training for County employees	3rd
SOLID WASTE – PAPER WASTE REDUCTION		
SW-8	Develop and implement a comprehensive paper-waste reduction policy that includes specific reduction targets a. Ensure key agencies (i.e., agencies providing centralized services and agencies whose work is paper-intensive) are involved in designing comprehensive paper reduction policies and standards b. Minimize paper-based communication to employees c. Reduce paper towel use	1st

Beyond Reductions

This action area contains measures that focus on steps to remove greenhouse gases from the atmosphere after they have been released and to prepare for the impacts of climate change.

Alameda County Commitments to Climate Protection Addressed: 15 - 16.

Monitoring and Reporting:

- Tracking the increase in carbon storage and sequestration capacity from County sponsored projects; and
- Providing progress reports on efforts to adapt to the impacts of climate change.

BEYOND REDUCTIONS – CARBON CAPTURE AND STORAGE		
BR-1	Restore and protect the ability of natural ecosystems to capture and store carbon a. Assess opportunities for carbon sequestration projects on County property (e.g., wetlands, salt ponds) b. Continue to expand the tree planting and other carbon capture projects on County property and in the unincorporated communities	1st

BEYOND REDUCTIONS – CLIMATE CHANGE ADAPTATION		
BR-2	Convene a climate adaptation workgroup to plan for the impacts of a changing climate	Not prioritized as these measures do not reduce GHG emissions but rather are crucial actions to prepare the County for the impacts of climate change
BR-3	Conduct a vulnerability assessment of the greatest risks posed by climate change to the County, including risks to public health and impacts to vulnerable populations	
BR-4	Develop a County Climate Adaptation Plan based on the vulnerability assessment	
BR-5	Integrate climate change considerations into County facility and infrastructure planning a. Consider the impacts that climate change will have on infrastructure b. Avoid locating facilities in areas at risk from flooding, sea-level rise, storm surges, erosion, or temperature and precipitation changes c. Identify and protect vulnerable infrastructure that has significant economic, cultural, or social value	
BR-6	Integrate the impacts of climate change into agency plans for operations and service delivery a. Integrate climate change impacts into the strategic and business plans of departments that will be affected b. Update hazard mitigation and emergency operation plans to consider potential climate change related hazards	
BR-7	Integrate climate change considerations into community planning processes a. Amend general plans to avoid potential climate impacts, develop risk reduction strategies, and avoid development in areas that cannot be adequately protected b. Expand protected areas and update land and water management practices to minimize adverse effects from climate change on sensitive ecosystems and habitat c. Consider climate change impacts on new development as required by California Environmental Quality Act (CEQA) guidelines	

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APPENDIX F: ALAMEDA COUNTY'S MISSION, VISION, AND VALUES

This appendix contains Alameda County's mission, vision, and values statement that was adopted by the Board of Supervisors in 2007.

MISSION

- To enrich the lives of Alameda County residents through visionary policies and accessible, responsive, and effective services.

VISION

- Alameda County is recognized as one of the best counties in which to live, work and do business.

VALUES

- Integrity, honesty and respect fostering mutual trust.
- Transparency and accountability achieved through open communications and involvement of diverse community voices.
- Fiscal stewardship reflecting the responsible management of resources.
- Customer service built on commitment, accessibility and responsiveness.
- Excellence in performance based on strong leadership, teamwork and a willingness to take risks.
- Diversity recognizing the unique qualities of every individual and his or her perspective.
- Environmental stewardship to preserve, protect and restore our natural resources.
- Social responsibility promoting self-sufficiency, economic independence and an interdependent system of care and support.
- Compassion ensuring all people are treated with respect, dignity and fairness.

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APPENDIX G: EMPLOYEE ACTIONS TO REDUCE GREENHOUSE GAS EMISSIONS

The *Alameda County Climate Action Plan for Government Services and Operations* (the Plan) will only succeed through action at all levels of the County government. In particular, the actions of individual employees will play a significant role in determining whether the County will meet its emissions reduction targets. Greenhouse gas (GHG) emissions are released from almost every aspect of the County's operations. Individual employees carrying out their daily tasks are in the best position to identify inefficiencies and sources of GHG emissions, as well as make recommendations on ways to reduce those emissions. Individual employees can also make small changes to their daily habits that, combined, create measurable GHG reductions by reducing the use of resources such as paper, fuel, and energy.

This appendix contains suggested actions that employees can take today to reduce the County's GHG emissions. They are organized by the action areas used in the Climate Action Plan. Each suggestion supports the implementation of one or more of the recommended emissions reduction measures.

Note: This is not a complete list of all possible actions, nor will every suggestion apply to every employee but rather is a list of suggestions designed to spark new ideas and provide ideas for where to start reducing personal and departmental environmental impacts.

CLIMATE PROTECTION LEADERSHIP

- Volunteer to lead an emissions reduction action in your agency or take part in a Countywide stakeholder group implementing one of the emissions reduction measures
- Take part in your agency's or department's Green Team, or start one if one does not already exist
- Be aware of sources of GHG emissions and steps you could take to reduce those emissions in your day-to-day work life
- Report inefficiencies you observe and share ideas on how to reduce emissions with your Agency Climate Coordinator, supervisor, or Green Team
- Begin a new program within your department aimed at reducing emissions through increasing energy efficiency, decreasing fuel use, preventing waste generation and promoting recycling, or other actions
- When hiring, orienting, or training other employees, emphasize the County's commitment to sustainability and climate protection
- Consider the environmental costs and benefits of decisions and practices with which you are involved

CROSS-CUTTING MEASURES

Education and Outreach

- Participate in educational opportunities to learn more about sustainability practices; pass on information (such as the Climate Action Plan) to your co-workers
- Submit your environmentally related questions to the "Green Guide" feature that appears in the Countywide employee newsletter, the *Courier*
- Visit www.acsustain.org to learn more about the County's sustainability initiatives
- Recognize and celebrate successes in reducing emissions made by your department and colleagues
- When presenting to the public, discuss the environmental features or aspects of your topic (e.g., green features of a new construction project, the connection between environmental and personal health)
- Write an article featuring a climate protection action, environmental tip, or a success story of a colleague for your department's employee newsletter or Intranet

Sustainable Purchasing

- When purchasing materials, supplies, and other goods, consider buying items that have high recycled content (e.g., 100% recycled paper), can be reused (e.g., refillable pens), or can be easily recycled (e.g., from vendors with take-back policies)
- When making large orders, talk to the supplier about opportunities to ship in bulk or use reusable packaging materials
- When using an outside printing service, ask for maximum recycled content paper
- Consolidate group, office, and other supply orders to reduce the transportation and packaging required for multiple deliveries
- Ask vendors to set up new equipment with the highest appropriate resource- and energy-efficiency settings
- Visit Property and Salvage to find pre-owned furniture and equipment before buying new

Technological Innovation and Communications

- Adjust equipment settings so that computers, peripherals, and other equipment powers down when not in use
- Use teleconference and web meetings instead of traveling (or asking others to travel) to in-person meetings
- Store and share documents electronically as opposed to printing
- See the ideas in the Solid Waste section below for more ideas on using technology to reduce paper use

Greening Events and Operations

- Aim to host a zero waste event: if food and drink is served, use reusable dishes and cutlery and provide recycling and composting
- Provide water pitchers; provide any bottled beverages in large (e.g., two-liter) bottles
- Hold events at locations close to public transit lines and provide directions for reaching the event by transit to attendees
- Serve locally produced, healthy foods that are not heavily processed
- Develop a green events checklist for use in your department/agency

BUILT ENVIRONMENT

- Make a habit of turning off lights when you leave your workspace; modern fluorescent lamps should be turned off if not needed for more than 10 minutes
- Turn off personal computers, lights, and other equipment at the end of the day (and when not in use)
- In workspaces with windows, turn off office lights in favor of natural light as much as possible
- Turn off shared equipment at the end of the day
- Dress appropriately for the temperature in your office rather than adjusting the thermostat or using personal heaters/fans
- Use natural lighting from windows and turn off office lights when possible
- Adjust shades/blinds appropriately to maximize lighting and minimize heat gain
- Take the stairs instead of the elevator for fitness and energy savings
- Turn off water while washing hands, dishes, and other items
- Conserve water by disposing of trash in trash bins, not the toilet
- Report water leaks and other inefficiencies (e.g., running toilets, improperly adjusted sprinklers, leaking faucets) to the County's Building Maintenance Division
- Turn off water while doing other things (e.g., soaping hands or washing dishes)
- Wash full loads when running dishwashers or washing machines
- Scan documents into digital files to minimize need for warehouse storage

TRANSPORTATION

- Try alternative transportation modes, such as walking, biking, and public transit, for your commute or to get to business meetings and share your experience with colleagues
- Participate in Bike to Work Day, County commuter clubs, and commuter fairs as a fun social way to use alternative commute modes
- Set up or participate in a carpool and vanpool with colleagues who live close to you
- Enroll in the pre-tax commuter benefits program and the Alameda County Guaranteed Ride Home Program
- Take the shuttles from BART to County facilities
- Inquire about opportunities to telecommute
- Inquire about opportunities to work a compressed schedule, such as four 10-hour days or 80 hours over nine days
- Walk to local lunch facilities rather than drive
- Ask whether in-person meetings are necessary or if they can be conducted by teleconference
- Ride together when attending meetings with colleagues
- Ask for hybrid, other high-efficiency, or alternative fuel vehicles when checking out a pool car
- Check maps and traffic conditions (i.e., call 511 or visit 511.org) to identify the fastest, most direct route to your destination
- Schedule meetings on the same day in the same building or nearby locations to minimize travel
- Schedule field work (e.g., case visits, inspections) geographically to minimize travel
- Make sure your vehicle is properly maintained (e.g., correct tire pressure)
- Do not idle vehicles; turn off if stopped for more than 10 seconds
- When driving, slow down gradually and accelerate evenly to save gas

SOLID WASTE

- Request desk-side paper and common area recycling bins if you do not have them
- Place paper, bottles and cans, and other recyclables into the appropriate recycling bins
- Carry a reusable water bottle or coffee mug
- Keep a mug, dish, and silverware at work to avoid use of disposables for lunch or events
- Pack your lunch in reusable containers (e.g., reusable bag, plastic containers, stainless steel containers)
- Return toner cartridges to the supplier when new cartridges arrive
- Tape used batteries and send to Property and Salvage using the pre-printed messenger bags (contact the Messenger Service to request more)
- Purchase items that can be reused instead of disposable items
- Reuse supplies like file folders, paper clips, and binders
- Call Property and Salvage to collect used furniture, equipment, and any materials you are disposing of in large quantities
- Contact Property and Salvage to determine if reused items and materials are available before making new purchases
- Create shared paper files and circulate publications among your group to minimize the number of copies needed
- Remove yourself from mailing lists that send publications and catalogs you do not use
- Reuse single-sided paper as scratch paper or print on the other side
- Print and copy double-sided
- Store and share documents electronically rather than printing (e.g., access information online, do not print emails, use “track changes” to share edits)
- Switch to electronic formats for employee newsletters
- Ask for or create electronic processes to replace paper processes

BEYOND REDUCTIONS

- Plant trees appropriate to the climate in your yard at home
- Consider the impacts of climate change (e.g., sea-level rise, warmer temperature) when planning new County projects

APPENDIX H: GLOSSARY OF TERMS AND ABBREVIATIONS

This appendix contains definitions for terms and abbreviations used in the *Alameda County Climate Action Plan for Government Services and Operations* (the Plan). These definitions were adapted from a number of sources, including the U.S. Environmental Protection Agency, StopWaste.Org, the California Environmental Protection Agency, the California Climate Change Portal, the Bio-integral Resource Center, the State of Oregon Department of Environmental Quality, the Municipal Research and Services Center of Washington, the Canadian Department of Industry, Merriam-Webster Online, Wikipedia, and Wiktionary.

80 PLUS: An incentive and performance specifications program focused on integrating energy-efficient power supplies into computer equipment. Power supplies are the devices that power electronics, often known as the black box on a laptop cord or the adaptor on the plug of electronics. They convert the AC power (alternating current) delivered to the outlet into the DC power (direct current) used in most electronics. The 80 PLUS program requires this conversion to be 80% efficient – that is, no more than a 20% energy loss.

9/80 Schedule: A compressed work week schedule in which employees work 80 hours over nine days with one day off. This frequently consists of eight nine-hour days, one eight-hour day, and the last Friday of the pay period off.

AB32: See Assembly Bill 32, the *Global Warming Solutions Act of 2006*

Action Area: The highest level of organization of the emissions reduction measures in the Climate Action Plan. They correspond to the areas in which action will occur to reduce the County's carbon footprint. See Chapters 3 to 8 for a complete description of each action area.

AC Transit: Alameda-Contra Costa Transit District, the operator of public bus service for communities on the eastern shore of the San Francisco Bay.

Adaptation: The ability of a system to adjust to, or minimize, the potential impacts of climate change or other environmental disturbances.

Agency Climate Coordinator: Representatives of the various agencies within Alameda County who met regularly during the development of the Climate Action Plan to provide advice, insight into their agency's operations, and review documents.

Alternative Fuels: Substitutes for traditional fossil-fuel-derived liquid motor vehicle fuels like gasoline and diesel. Includes biodiesel, hydrogen, electricity, compressed natural gas, methanol, ethanol, and mixtures of alcohol-based fuels with gasoline.

Alternative Fuel Vehicle: A vehicle powered by an alternative fuel as opposed to traditional gasoline or diesel.

Assembly Bill 32 (AB32): The *Global Warming Solutions Act of 2006* is the law that set the State of California's 2020 greenhouse gas emissions reduction target of reducing greenhouse gas emissions to 1990 levels. It also directed the California Air Resources Board to develop a Scoping Plan to outline how best to reach the 2020 target.

Atmosphere: The blanket of air surrounding the earth that supports life. The atmosphere absorbs energy from the sun and retains heat. It also recycles water and other chemicals and protects the Earth from high-energy radiation and the frigid vacuum of space. The Earth's atmosphere consists of approximately 79% nitrogen (by volume), 20% oxygen, 0.036% carbon dioxide, and trace amounts of other gases.

B-20, B-100, or B-50: See Biodiesel

BAAQMD: See Bay Area Air Quality Management District

BART: Bay Area Rapid Transit, the regional light rail system in the San Francisco Bay Area.

Baseline Emissions/Level/Inventory: The amount of greenhouse gas emissions released in a designated year against which future changes in emissions levels are measured. For Alameda County government, the baseline year is 2003. Baseline estimates are needed to determine the effectiveness of emissions reduction programs by providing a basis for comparison.

Bay Area Air Quality Management District (BAAQMD): The public agency that regulates sources of air pollution in the nine counties that surround San Francisco Bay.

Bay Friendly Landscaping: A program run by StopWaste.Org that provides tools and information on creating landscaping adapted to the natural conditions of the San Francisco Bay Area. Techniques include using mulch, permeable pavement, smart irrigation controllers, and planting with native vegetation. These practices foster soil health and conserve water and other natural resources, while reducing waste, preventing pollution, and providing natural habitats.

Bioaccumulative: Refers to the process by which the concentrations of some toxic chemicals, such as mercury, gradually increase in living tissue, such as in plants, fish, or people, as they breathe contaminated air, drink contaminated water, or eat contaminated food.

Biodiesel: a form of diesel fuel manufactured from vegetable oils (used or new) or animal fats. Biodiesel can be used in its pure form (B100) or blended with petroleum diesel in varying proportions (e.g., B20 is 20% biodiesel, 80% petroleum diesel).

Building Envelope: The physical separation between the interior and the exterior of a building – comprised of the walls and insulation, windows and doors, roof, foundation, etc. It serves as the outer shell (sometimes called the skin) of the building, and allows for control of the indoor environment (e.g., heating, cooling, moisture control, air pressure).

C&D: Construction and Demolition, usually used in reference to the waste produced in building projects.

CAFE: See Corporate Average Fuel Economy

CAO: County Administrator's Office, Alameda County.

Capital Improvement Plan: An Alameda County planning document which identifies capital projects, major equipment purchases, and financing options. The plan is the link between comprehensive and strategic plans and the annual budget. It is developed to assist the Board of Supervisors with identifying long-range funding needs to support County programs, improvements, and infrastructure. This plan is updated annually.

Carbon Dioxide (CO_2): The greenhouse gas whose concentration is being most affected by human activities. CO_2 also serves as the reference to compare all other greenhouse gases (see Carbon Dioxide Equivalencies). The major source of CO_2 emissions is fossil fuel combustion. CO_2 emissions are also a product of forest clearing, biomass burning, and non-energy production processes such as cement production. Atmospheric concentrations of CO_2 have been increasing at a rate of about 0.5% per year and are now about 30% above preindustrial levels.

Carbon Dioxide Equivalencies (CO_2e): Emissions from different types of greenhouse gases (carbon dioxide [CO_2], methane [CH_4], and nitrogen dioxide [N_2O]) are reported in terms of equivalent carbon dioxide units based on their ability to trap heat in the atmosphere. For example one ton of methane traps 21 times the heat of a ton of carbon dioxide, therefore, 1 ton CH_4 = 21 tons CO_2e. Similarly, 1 tons N_2O = 310 tons CO_2e.

Carbon Footprint: The total set of greenhouse gas emissions caused directly and indirectly by an individual, organization, event, or product.

Carbon Sequestration: See Sequestration

CDA: Community Development Agency, Alameda County.

CEC: California Energy Commission, the primary energy policy and planning agency for the State.

Climate: The average weather (usually taken over a 30-year time period) for a particular region and time period. Climate is not the same as weather. It is the average pattern of weather for a particular region. Climatic elements include average annual temperature, humidity, sunshine, wind speed, precipitation, and other measures of atmospheric conditions.

Climate Change: A significant change in climatic conditions (such as temperature, precipitation, or wind) that lasts for an extended period (decades or longer). Climate change should not be confused with weather, which is the short-term fluctuation in these conditions. A change in the climate effectively means that there is a new set of expected atmospheric conditions.

Climate Prosperity: A term that refers to the fact that climate protection actions will create a wide range of savings and benefits for the County, community, and local economy. Climate protection will lead to less spending on energy; new employment and entrepreneurial opportunities; expanded renewable energy production; and the development of a range of new products, technologies, and production processes.

Climate Stabilization (Goal): The maximum level of greenhouse gases that can be present in the atmosphere before the worst impacts of climate change occur. This is often measured as the concentration of carbon dioxide in the atmosphere, and widely considered to be approximately 350 parts per million (ppm) of CO_2e. The concentration of greenhouse gases in the atmosphere in 2008 was approximately 385 ppm. Maintaining this concentration of CO_2e will require an 80% reduction in greenhouse gas emissions by 2050.

CO_2: See Carbon Dioxide

CO_2e: See Carbon Dioxide Equivalencies

Co-Benefits: Additional benefits that occur as a result of greenhouse gas reduction measures. These include financial savings, improved air quality, increased health or safety, better communications, improved employee morale, and natural resource concentration.

Composting: The controlled breakdown of organic material (e.g., plant trimmings, kitchen scraps, paper) through natural decomposition processes into a nutrient rich soil.

Compressed Work Week: An alternative work schedule that combines longer workdays with a day off. For example, a standard 40-hour work week is completed in 4 days rather than 5 days, or 80 hours of work are completed in 9 days rather than 10 days.

Corporate Average Fuel Economy (CAFE): Regulations in the United States that specify the overall fuel efficiency of cars and light trucks (pick-up trucks, vans, and sport utility vehicles) sold in the United States. These regulations require that the overall average fuel efficiency of all vehicles a manufacturer sells exceeds a minimum level, measured in terms of miles per gallon.

Decomposition: The process by which organic material (plants, animals, and items derived from them such as paper and wood products) breaks down into simpler forms of matter. Also commonly known as rotting.

Ecosystem: An ecological community of interdependent plant and animal species and their physical environment.

Electric vehicle: A vehicle that operates on an electric motor, powered by batteries, that is recharged by connecting it (plugging in) to an external electricity source.

Emissions Forecast: The emissions that would occur in a future year if no action were taken to change those levels. This is also called a business-as-usual scenario.

Emissions Reduction Measures: See Measures

Energy Conservation: Reducing energy consumption. Energy conservation can be achieved through energy efficiency (getting the most productivity from each unit of energy) or by reduced use of energy such as turning off appliances when not in use.

Energy Efficiency: Using less energy to provide the same level of service or complete the same task. For example, a more efficient light will use less electricity to provide the same amount of illumination.

Energy Star: An international program, developed by the U.S. Environmental Protection Agency and the U.S. Department of Energy, which identifies energy-efficient consumer products. Energy Star rates a diverse range of items, including computers and peripherals, kitchen appliances, and even buildings. These items generally use 20% to 30% less energy than required by federal standards.

Environmentally Preferable Purchasing: See Sustainable Purchasing

EPA: See U.S. Environmental Protection Agency

EPEAT: The Electronic Products Environmental Assessment Tool, a system developed by the Green Electronics Council to evaluate computing equipment on 28 efficiency and sustainability criteria. This system helps purchasers determine whether a computer system is a green computing system.

Facilitating Measures: Emissions reduction measures identified in the Climate Action Plan that do not directly reduce greenhouse gas emissions but are necessary for the implementation of other measures that do reduce emissions. Facilitating measures may remove barriers to implementing other actions, provide information to assist with other choices, or make tools available that are needed in implementing other measures.

Flexible Work Arrangements: Work arrangements that allow employees to deviate from a set schedule or location. This could include options for telecommuting, working a compressed work week, and starting or ending the workday at times other than conventional shift times (e.g., 8 am and 5 pm).

Forecast: See Emissions Forecast

Fossil Fuel: A general term for combustible geologic deposits of carbon, including coal, oil, natural gas, oil shale, and tar sands. These fuels emit carbon dioxide into the atmosphere when burned, thus significantly contributing to the enhanced greenhouse effect.

Fuel Cell: A device that converts a source of fuel into electricity through a chemical reaction that does not involve burning the fuel. These chemical processes are similar to those occurring in a battery, but with a continual input of fuel and output of electricity. Most commercial fuel cells use natural gas-derived hydrogen as the fuel source.

Fuel Efficiency: The distance a vehicle can travel on an amount of fuel. This is most often measured in miles traveled per gallon of fuel. A higher-efficiency vehicle travels farther on a gallon of fuel than similar vehicles.

General Plan: A long-range policy document to guide land use decisions about physical, economic, and environmental growth. California State law requires counties and cities to have a General Plan which contains seven elements: Land Use; Transportation; Housing; Open Space; Conservation; Safety; and Noise. County general plans cover unincorporated areas.

GHG: See Greenhouse Gas

Global Positioning System (GPS): In the context of the Climate Action Plan, a system that provides information on a vehicle's location, speed, and condition.

Global Warming: An increase in the near surface temperature of the Earth. Global warming has occurred in the distant past as the result of natural influences, but the term is most often used to refer to the warming predicted to occur as a result of increased emissions of greenhouse gases due to human activity.

GPS: see Global Positioning System

Green(ing): An environmentally preferable version of something (transforming something into a more environmentally friendly version of itself).

Green Building: A structure constructed using materials and building practices that reduce its impact on the environment throughout its entire life (siting, design, construction, operations, and deconstruction). Green buildings are resource efficient, using less energy, water, and other materials.

Green Infrastructure: The network of trees, plants, and natural ecosystems in a community. These provide services to a community, such as decreasing rainwater runoff, providing healthy soils, removing air pollutants and greenhouse gases from atmosphere, and providing shade and beautification.

Greenhouse Effect: Carbon dioxide and other atmospheric gases warm the surface of the planet by trapping heat close to the surface of the Earth. In a natural state, the greenhouse effect warms the planet, making it habitable by humans. However, human activities have dramatically increased the amount of carbon dioxide and other greenhouse gases in the atmosphere. Higher levels of greenhouse gases trap more heat, causing temperatures to rise.

Greenhouse Gas: A gas, including water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which traps heat close to the surface of the Earth, contributing to global warming and climate change.

Greenhouse Gas Reduction Measures: see Measures

GSA: General Services Agency, Alameda County.

Hoteling: A system of providing one or more unassigned work stations in an office that can be used by co-workers from other locations, field staff, or others without an assigned workstation in the building.

HVAC: Heating, Ventilation, and Air Conditioning systems.

Hybrid Vehicle: See Hybrid-Electric Vehicle

Hybrid-Electric Vehicle: A vehicle that uses both a conventional gasoline-powered internal combustion engine and an electric motor to achieve better fuel efficiency than a traditional vehicle. The vehicles have a battery pack that is recharged when the gasoline engine is producing more power than the vehicle needs to operate, therefore the vehicle does not need to be charged by an external electricity source (unlike a plug-in hybrid-electric vehicle or electric vehicle).

Infrastructure: The basic shared physical structures needed for an urban area to function in an efficient, safe manner. The term typically refers to items such as roads, drinking water systems, sewers, energy systems, and telecommunication systems in a community.

IT: Information Technology, systems and areas of expertise related to computer-based information systems, such as software applications and computer hardware.

Jurisdiction: In general, a legal authority. The County is the governing body that oversees the unincorporated areas within its boundaries, therefore it has jurisdiction over those areas. The areas within the County's geographic boundaries can also be referred to as its jurisdiction. Similarly, other cities and counties are often referred to as other jurisdictions.

Kilowatt (KW): One thousand watts.

Kilowatt-hour (KWh): an amount of electricity equivalent to the use of one kilowatt for one hour. A hundred watt light bulb that is on for 10 hours uses one kilowatt-hour of electricity (100 watts x 10 hours = 1,000 watt-hours = 1 kilowatt-hour). Electricity production or consumption is often expressed as kilowatt- or megawatt-hours produced or consumed during a period of time. Residential energy bills usually change users by cents per kilowatt-hour. A U.S. household might consume 10,000 kilowatt-hours per year.

Leadership in Energy and Environmental Design (LEED®): A set of green building standards developed for the U.S. Green Building Council. They provide a set of criteria against which the environmental sustainability of a building's design and construction or operations can be measured. Buildings can be LEED Certified, Silver, Gold, or Platinum depending on the number of criteria they fulfill.

LEED®: See Leadership in Energy and Environmental Design

Lifecycle assessment/lifecycle analysis: The evaluation of a product or service's impacts (environmental, financial, etc.) from production through use to disposal. A greenhouse gas lifecycle analysis of a product would include the emissions associated with the extraction and processing of raw material, manufacture, transportation to the County, use, and disposal (e.g., in a landfill, transfer to a reuse facility) at the end of its life. A lifecycle financial analysis would consider the costs to purchase, operate, and dispose of a product. This is often compared to an end user greenhouse gas analysis, which only considers the emissions associated with using a product, or a traditional financial analysis which focuses on the cost to purchase a product. Also known as a cradle-to-grave analysis.

Management Competencies: A defined set of skills managers should have in order to successfully fulfill their job duties and manage staff.

Measures: The primary component of the Climate Action Plan. The measures are specific short and long-term policies, programs, and actions that the County will carry out to reduce its greenhouse gas emissions.

Megawatt (MW): One million watts.

Methane (CH_4): A greenhouse gas that traps 21 times the amount of heat as carbon dioxide. (Recent research indicates this might be as high as 25 times; however, the U.S. EPA uses a factor of 21 when calculating methane's impact on global warming). Methane is produced through the decomposition of waste in landfills, animal digestion, decomposition of animal wastes, incomplete fossil fuel combustion, and the production and distribution of natural gas, oil, and coal.

Metric Ton: Common international measurement for the quantity of greenhouse gas emissions. A metric ton is equal to 2,205 lbs or 1.1 short tons (the common form of ton used in the United States).

Mitigation: A human intervention to either reduce the amount of greenhouse gases being emitted into the atmosphere or remove previously emitted gases from the atmosphere.

N_2O: See Nitrous Oxide

Nitrous Oxide (N_2O): A powerful greenhouse gas with the ability to trap 320 times the amount of heat as a molecule of CO_2. Major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.

Non-Motorized Transport: Any form of transportation that relies on human power as opposed to an external power source (e.g., walking, biking, skateboarding).

Ozone (O_3): An important greenhouse gas that is responsible for global warming, contributes to the formation of smog, and has harmful effects on human health and the environment.

Pacific Gas & Electric Company (PG&E): The utility company that is the primary provider of electricity and natural gas in northern California and the San Francisco Bay Area.

Parts Per Million (ppm): A unit commonly used to express concentration. In the same way that 1% refers to 1 part out of 100, 1 ppm means that one part of a given substance is present in every million total parts examined.

PG&E: See Pacific Gas & Electric Company

Photosynthesis: The process by which green plants use light to synthesize organic compounds from carbon dioxide and water. In this process, carbon dioxide is absorbed from the air and oxygen and water are released. Through this process, plants become a very important reservoir for storing carbon dioxide in the form of carbon.

Plug-in Hybrid-Electric Vehicle: A hybrid vehicle with batteries that can be recharged from an external electric power source. Unlike a hybrid vehicle, it has a larger battery pack and a plug that connects to the electric grid in order to recharge. This external power source provides the vehicle with a much longer range per gallon of gasoline.

Pollutant: An air pollutant is a substance in the atmosphere that causes adverse effects to human health, property, or the environment.

PWA: Public Works Agency, Alameda County.

Recycled-Content Products: Products made totally or partially from materials contained in items that would otherwise have been discarded, such as aluminum cans or paper. Recycled-content products also include rebuilt or re-manufactured items, such as toner cartridges.

Recycling: A process that minimizes waste generation by recovering and reprocessing products that might otherwise be sent to a landfill. For example, recycling aluminum cans, paper, and bottles entails reprocessing them into new products that are made with fewer raw materials.

Renewable Energy/Power: Energy generated from sources that are naturally replenished or not used up in the course of providing power (e.g., wind, solar, biomass, and geothermal). This is in contrast to the burning of fossil fuels, which destroys the fuel source and thereby depletes the overall amount of fuel available.

Renewables Portfolio Standard (RPS): A regulation, typically found at the state level in the U.S., that requires an increased amount of energy to be generated from renewable energy sources. For example, a 33% RPS requires that 33% of the electricity a utility company delivers to customers be produced from wind, solar, biomass, or another renewable source.

Retro-Commissioning: A process in which specialists inspect major building systems (e.g., HVAC, lighting) and interview maintenance staff and building occupants to assess a building's performance and identify opportunities to improve the efficiency of its operations and to restore them to optimal performance.

Retrofit: The addition of new technology or features to older systems. For example, adding new energy-efficient lamps to existing lighting fixtures.

RPS: see Renewables Portfolio Standard

Scoping Plan: The document, adopted by the California Air Resources Board, that outlines the actions the State of California will take to reduce greenhouse gas emissions in the state.

Sequestration: The uptake and storage of carbon from the atmosphere. Most commonly refers to trees and plants absorbing carbon dioxide through photosynthesis (see Photosynthesis).

Smart Grid: An electricity system that utilizes two-way communication between power suppliers and consumers. This allows for adjustments to a facility's operations to save energy, reduce cost, and increase the reliability of the power supply. A smart grid includes a monitoring system at facilities that can turn off or adjust systems to reduce demand at peak times when power is more expensive. For example, a smart grid could temporarily turn off selected appliances, such as washing machines, or adjust a building temperature by a few degrees to save power.

Smart Meter: An electrical meter that tracks power consumption in real-time, communicates with the local utility company for monitoring and billing purposes, and (if connected to a smart grid) can adjust a building's energy use automatically to reduce demand on the power grid at peak use times.

Smog: A type of air pollution that forms in the atmosphere when vehicular and industrial emissions react with one another and sunlight.

Snowpack: The naturally formed, packed snow that accumulates during the cold season and melts during warmer months. Many areas of California depend on Sierra Nevada winter snowpack melt for their drinking water.

Soft-phone: A software program for making telephone calls over the Internet. This is sometimes used in conjunction with traditional-appearing telephone equipment (keypad, headset, etc.) that connects to a computer or local area network instead of a telephone network.

Source: Any process or activity that releases a greenhouse gas into the atmosphere.

StopWaste.Org: The Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board operating as one public agency. It is dedicated to reducing solid waste in Alameda County. This agency offers a wide variety of programs and services in the areas of waste reduction, residential and commercial recycling, market development, procurement of recycled products, technical assistance, and public education.

Strategies: Groups of similar emissions reduction measures included in the Climate Action Plan.

Supporting Actions: Suggestions for steps to be taken in implementing the emissions reduction measures identified in the Climate Action Plan. Supporting actions are identified for some measures, in circumstances where these actions have a higher profile, are a priority within the County, or have the potential for particularly high greenhouse gas reductions.

Sustainable Purchasing: The procurement of goods and services that have a less harmful effect on human health and environment than competing goods or services that serve the same purpose. Sustainable purchasing decisions take into consideration criteria such as raw materials acquisition, production, manufacturing, packaging, distribution, operation, maintenance, reuse, disposal, energy efficiency, performance, durability, and safety, as well as needs of the purchaser and cost.

Sustainability: In a broad sense, the capacity to endure. In ecology, the word describes how biological systems remain diverse and productive over time. For human society, it is the potential for long-term maintenance of well-being, which in turn depends on the well-being of the natural world and the responsible use of natural resources. Sustainability has multiple facets: environmental, economic, and social.

Telecommute: A system that allows employees to work from home or locations other than their assigned office. Telecommuting usually involves having remote access to the business computer network and the office phone system.

Therm(s): A unit of measurement of natural gas. It is approximately the energy equivalent of burning 100 cubic feet of natural gas. It is equivalent to 100,000 British thermal units (BTU) or about 29.3 kilowatt-hours of electrical energy.

Unincorporated Area: A region that is not part of a municipality (city). To incorporate means to form a municipal corporation – a city or town with its own government. Thus, an unincorporated community does not have its own municipal government and is administered by another authority, such as the county government. In Alameda County, these communities include (but are not limited to) Ashland, Castro Valley, Cherryland, Fairview, San Lorenzo, and Sunol.

U.S. Environmental Protection Agency (EPA): The federal environmental science, research, education, assessment, and regulatory agency. The mission of the Environmental Protection Agency is to protect human health and the environment.

Voice Over Internet Protocol: A general term for technologies that transmit voice communications over networks such as the Internet, instead of through traditional telephone networks.

VOIP: See Voice Over Internet Protocol

Waste Diversion: A waste reduction strategy focused on the recycling or composting of materials, diverting what would otherwise have been sent to a landfill for use in new products.

Waste Reduction: Techniques such as source reduction, recycling, or composting that reduce waste generation or prevent waste from being created at all.

Waste Sort: An analysis of a facility's waste not being recycled or composted that involves sorting the garbage produced by type (e.g., paper, food waste, plastic) to determine what is being thrown away.

Waste Stream: The total flow of solid waste from homes, businesses, institutions and manufacturing plants that is recycled, composted, burned, or disposed of in landfills.

Watt: The standard measure of an amount of energy, usually electricity. For example, a 60 watt light bulb requires 60 watts of electricity to turn on. Energy use is measured in terms of the number of watts used over a period of time (see Kilowatt-hour).

Weather: The specific condition of the atmosphere at a particular place and time. It is measured in terms of such factors as wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather changes from hour to hour, day to day, and season to season. Climate is the average of weather over time and space. A simple way of remembering the difference is that climate is what you expect (e.g., cold winters) and weather is what happens (e.g., a blizzard).