[Jurisdiction] Climate Action Plan Template (Energy Portion)

Local Actions and Policies for Reducing [Jurisdiction]'s Greenhouse Gas Emissions

Approved by [Local Authority]

[Date Approved]

[Reference to Public Record]

[Reference to Further Information]

Local Government Seal

Produced by [Name of Lead Department or Task Force]
With Assistance from the Statewide Energy Efficiency Collaborative

This template is a product of the **Statewide Energy Efficiency Collaborative** (SEEC). SEEC is a new alliance to help cities and counties reduce greenhouse gas emissions and save energy. SEEC is a collaboration between three statewide non-profit organizations and California's four Investor Owned Utilities.

Statewide Energy Efficiency Collaborative

AN ALLIANCE TO SUPPORT LOCAL GOVERNMENT

SEEC members are:

- ICLEI-Local Governments for Sustainability USA
- Institute for Local Government
- Local Government Commission
- Pacific Gas and Electric Company
- San Diego Gas and Electric Company
- Southern California Edison Company
- Southern California Gas Company

SEEC provides education and tools for climate action planning, venues for peer-to-peer networking, technical assistance and recognition for local agencies that reduce greenhouse gas emissions and energy use. The collaborative effort is designed to build upon the unique resources, expertise and local agency relationships of each non-profit organization, as well as those of the four investor owned utilities.

The program is funded by California utility ratepayers and administered by Pacific Gas and Electric Company, San Diego Gas and Electric Company, Southern California Edison, and Southern California Gas Company under the auspices of the California Public Utilities Commission.

How to Use this Template

Please Read & Remove the Following Pages from Your Report

This **template Climate Action Plan** is intended for use by local governments in California taking action to reduce greenhouse gas emissions within their jurisdictions. To achieve significant overall reductions, a local government needs a bold vision, equitable process, smart implementation, and excellent communication with the public. This template is designed to speed the development of a custom Climate Action Plan document by reducing the time needed to create and publish content. This document may be useful for inspiration or reference in creating your own Plan. This template is one of several tools provided to local governments through the Statewide Energy Efficiency Collaborative (SEEC).

Wording or portions as they are within this template may not reflect local circumstances or be appropriate for all jurisdictions. As such, please modify this template as needed to accommodate local goals, knowledge, commitments, laws, and the results of your local government's emissions studies and planning process.

Modify the Template

Local governments are encouraged to use whatever information within this template they find useful. Sections may be added or removed or the layout changed altogether. The narrative language included here should be replaced or filled in as needed.

- Instructions in the document body are bold and highlighted. **Remove the instructions prior to release.**
- **Replace the words in brackets "[xxxxxx]"** found throughout the document.

The bracketed words function as placeholders for the name of your jurisdiction, a specific date of a local event, or other local information. To quickly find and replace these with local terms, use the functionality of your document editing software; for example, **use the Find and Replace function in Microsoft Word to search for common replaceable words like "[Jurisdiction]"** or for locating the brackets themselves "[". **Searching for either an opening or closing bracket by itself "[" will allow you to find all of the replaceable words**, replace them, and verify that none remain.

Start by finding and replacing (CTRL+F) the word "[Jurisdiction]" with the name of your local government. This will allow you to quickly customize the sample text included here.

Add your own greenhouse gas emissions inventory findings, forecast, and reduction target and change the document to describe your Climate Action Plan. Use visual aides where possible – good figures and tables can go a long way toward concisely and elegantly expressing the Plan. Sample figures and tables have been included in

this report as reference. Please replace these with custom figures and tables or modify the original files available online at: http://www.californiaseec.org/.

How to Use this Template

Remove This Page from Your Report

- **Enable the display of all characters in your document editing software to help with editing.**

This document utilizes formatting techniques such as page and section breaks, columns, page footers, Table of Contents, footnotes, and other features that may not be visible until they are explicitly made to be so. Please reference the Help function of your software to learn about how to view these characters and to learn about how they work.

- **A final note about some of the content within this template:**

This template includes an additional means by which to illustrate your local government's baseline emissions, forecast and reduction targets in the form of a "Focus Area Impacts" chart. Even if you have already completed your emissions inventory and forecast, you may not have created such an illustration. If you find it useful to include this chart in your plan, you may utilize the Excel file that accompanies this template. Instructions for utilizing the file to create the chart are included within the file itself.

Local governments structure their Climate Action Plans in a variety of ways. This document divides plan actions into focus areas such as "Energy Production" or "Transportation" – through which government and community initiatives can be explained. **The specific focus areas and projects used in this template are examples.** Good luck!

Credits and Acknowledgments

[Local Government Officials and Staff]

- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]

[External Agencies and Partners]

- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]

[Community Stakeholders]

- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]

[Plan Contributors]

- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]
- [Acknowledgement – Name and Title]

Table of Contents

Introduction

Provide an executive introduction that quickly summarizes:

- **The need for action**
- **Description of the document**
- **Major findings from the jurisdiction's greenhouse gas inventory**
- **Projections of future emissions**
- **The local emissions reduction target**
- **A summary of the actions within the plan**

Given the overwhelming consensus that anthropogenic or "man-made" greenhouse gas emissions are causing global climate change, the [City/County] of [Jurisdiction] is joining an increasing number of California local governments committed to addressing climate change at the local level. The [City/County] recognizes the risk that climate change poses to its constituents, and is acting now to reduce the greenhouse gas (GHG) emissions, or "carbon footprint", of both its government operations and the community at-large through the innovative programs laid out in this Climate Action Plan. Ultimately, local action is needed to reduce [Jurisdiction]'s contribution toward the problem of climate change and adapt to its current and future effects. This Climate Action Plan takes advantage of common sense approaches and cutting edge policies that our local government is uniquely positioned to implement – actions that can reduce energy use and waste, create local jobs, improve air quality, preserve our local landscape and history, and in many other ways benefit [Jurisdiction] for years to come.

Purpose, Scope, and Process Behind the Climate Action Plan

Purpose

By creating a clear course of action so that everyone can have a role in creating and achieving climate and sustainability goals, our Climate Action Plan drives and coordinates local efforts toward a reduction in GHG emissions of [Base Year] levels by [XX Year] and [XX] percent below [Base Year] emission levels by [XX Year].

The Climate Action Plan is a framework for the development and implementation of actions that reduce [Jurisdiction]'s GHG emissions. The Plan provides guiding objectives and strategies to realize [Jurisdiction]'s GHG reduction goal.

Scope

This Plan covers objectives and strategies for GHG emissions resulting from local government and community-wide activities within the [City/County]. It addresses the major sources of emissions in [Jurisdiction] and sets forth objectives and strategies in [XX] focus areas that both the [City/County] and community can implement together to achieve greenhouse gas reductions:

- [Focus Area]
- [Focus Area]
- [Focus Area]

The plan also creates a framework for documenting, coordinating, measuring, and adapting efforts moving

forward. In addition to listing actions, the plan discusses how each action will be implemented via timelines, financing, and assignment of responsibilities to departments, staff, or community partners where known.

Process

Describe planning process:

- **Composition of planning team**
- **Stakeholders involved**
- **Public engagement efforts, input**

While [Jurisdiction] has already begun to reduce greenhouse gas emissions through a variety of actions, this plan is a critical component of a comprehensive approach to reducing [Jurisdiction] emissions. This approach, developed by ICLEI, is called the Five Milestones for Climate Mitigation.

Milestone One: Conduct a baseline emissions inventory and forecast

Milestone Two: Adopt an emissions reduction target for the forecast year

Milestone Three: Develop a local climate action plan

Milestone Four: Implement the climate action plan

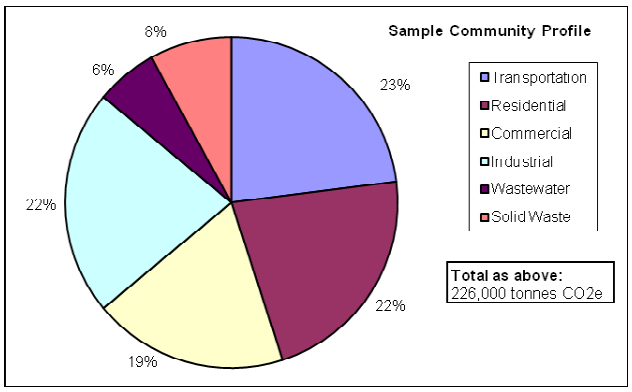
Milestone Five: Monitor progress and report results

[Jurisidiction]'s GHG Emissions

Convey community-wide and government operations GHG emissions information. If multiple inventories have been completed, you will be able to show GHG emissions trend lines. Also include the emissions forecast.

Through the completion of a local emissions study, or "greenhouse gas inventory," our [City/County] has determined emissions levels for the community as a whole and for [Jurisdiction] government operations. Community-wide emissions represent the sum total of emissions produced within [City/County] limits as well as emissions resulting from electricity use within the jurisdiction, even if said electricity is generated elsewhere. In this way, the community-wide figures represent all emissions for which the community is responsible.

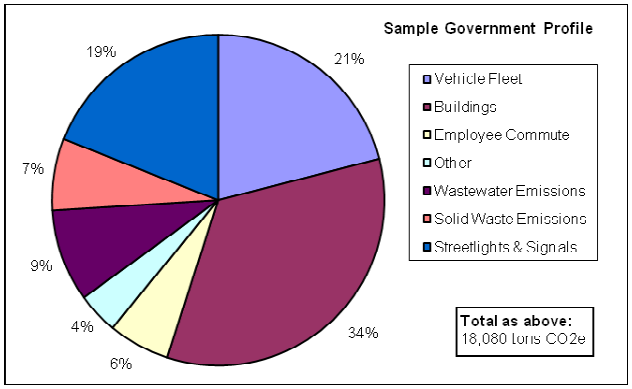
[Jurisdiction] Community-Wide GHG Emissions



Emissions from the [City/County] are embedded within the community-wide totals. For example, emissions from government buildings are included in the "Commercial" sector and emissions from [City/County] fleet vehicles are included in the "Transportation" figure above. Government operations are therefore a subset of total community emissions.

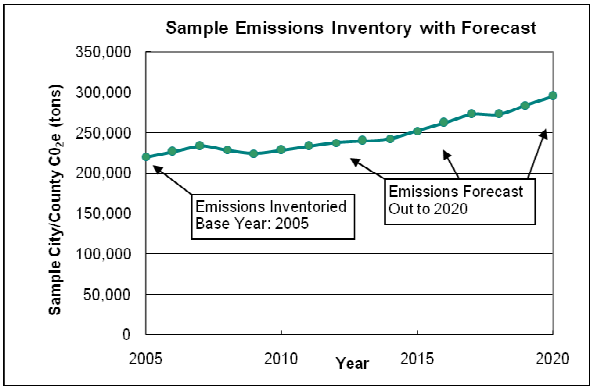
Government emissions include all sources for which the local government exercises direct operational control including **Refer to government operations GHG inventory, list emissions-generating services offered by local government, possibly including water/wastewater services, solid waste, electric utility, etc.**

[Jurisdiction] [City/County] Operations GHG Emissions



The [City/County] has also completed an emissions forecast based on projections of current data and expected future trends. The emissions forecast is a "Business As Usual" forecast, a scenario estimating future emissions levels if no further local action (i.e. projects within this Climate Action Plan) were to take place. The forecast indicates that, if we do not take action, GHG emissions will continue to increase. **Align statements with your local forecast.**

Projected Growth in GHG Emissions



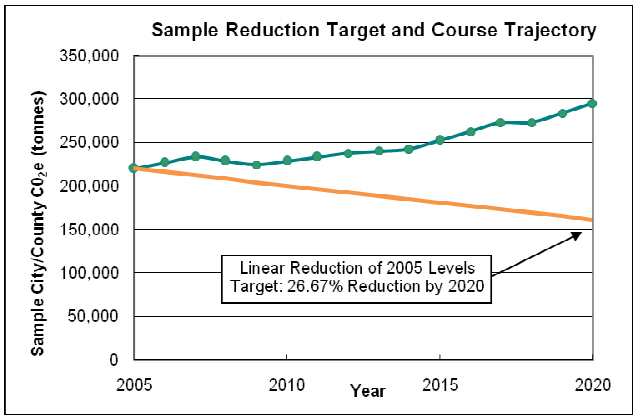
For complete information regarding the emissions inventory and forecast, including methodology and supporting data, please reference the [Jurisdiction] Emissions Inventory Report located at [Web Address or Public Record Denotation]. **This could be one or two reports depending on local efforts (government operations or community-wide GHG inventories, or a combined report).**

[Jurisdiction]'s GHG Reduction Target

Change as necessary to reflect your targets. [Jurisdiction] has set targets to reduce its emissions to [Base Year] levels by [Target Year], or [XX] percent below [Base Year] levels by [Target Year]. The combination of measures that [Jurisdiction] has already implemented, are currently planned, and are presented through this Climate Action Plan are

designed to achieve the [Target Year] targets. Reductions in [Target Year] rely on the best information currently available pertaining to population forecasts, future changes to building codes, and vehicle fuel efficiency standards among other information. **Align previous statement with the specific forecast methodology used.**

Emissions Reduction Target



[Jurisdiction]'s targets are consistent with, but more aggressive than targets adopted by comparable jurisdictions, suggested by regional or state agencies, or proposed in federal legislation. Most local governments in California with reduction targets have a priority target of 15-25% below 2005 levels by 2020. Targets proposed via federal legislation have sought reductions of 17-20% below 2005 levels by 2020. Almost all sources recommend a reduction of 80% by 2050. [Jurisdiction] anticipates being well ahead of these short-term recommendations as well as being in line with long-term recommendations via this Climate Action Plan.

The [Jurisdiction] Climate Action Plan

Consider collapsing specific actions into project categories such as "Energy" or "Buildings," "Transportation," and so on if you're plan has not been organized in this way already. These categories might be inspired through the GHG inventory process or other organizing principles, and make the plan easier to communicate. Summarize the Plan via table format, laying out all of the focus areas in one location.

The summary table below identifies the focus areas within the [Jurisdiction] Climate Action Plan, the number of strategies within each focus area, and the contribution of each focus area toward the GHG reduction goal. Each focus area has a dedicated section within this document where specific actions (both new and those already employed) are described.

While the [Jurisdiction] local government cannot address climate change by itself, government policies and practices can dramatically reduce greenhouse gas emissions from a range of sources and help prepare [Jurisdiction] for the anticipated impacts of climate change. In addition, the [City/County] of [Jurisdiction] will assist residents and businesses in their endeavors to reduce emissions through programs explained in this Plan. By working together, [Jurisdiction] can not only do its part toward achieving a stable climate - we can reap the benefits of healthier air, lower costs for utilities and services, improved transportation and accessibility, a more vibrant local economy, and many other positive side effects of reducing our carbon footprint.

[Jurisdiction] Climate Action Plan Summary Table – Focus Areas

Focus Area	Description **Table provided here as example – please fill in or modify according to local plan/conditions.**	Number of Distinct Strategies	Anticipated MTCO2e Reduction by 2020	Percentage of Total Reduction at 2020
Commercial & Industrial Buildings	Policies and programs to reduce commercial, municipal, and industrial sector GHG emissions, also interfacing with key utility efforts	9	~14,900	22%
Residential Buildings	Policies and programs to reduce residential sector GHG emissions, also interfacing with utility efforts	6	~12,900	19%
Energy Production	Policies and programs to promote local small-scale renewables, also interfacing with key utility efforts	7	~6,800	10%
Waste and Recycling	Policies and programs to reduce waste generation and landfill emissions, promote recycling	[X]	~10,200	15%
Water and Wastewater Management	Policies and programs to reduce water demands and corresponding wastewater treatment needs	[X]	~8,100	12%
Transportation	Policies and programs to reduce transportation-related GHG emissions	[X]	~7,450	11%
[Other Focus Area]	**Table provided here as example – please fill in or modify according to local plan/conditions.**	[X]	~7,450	11%

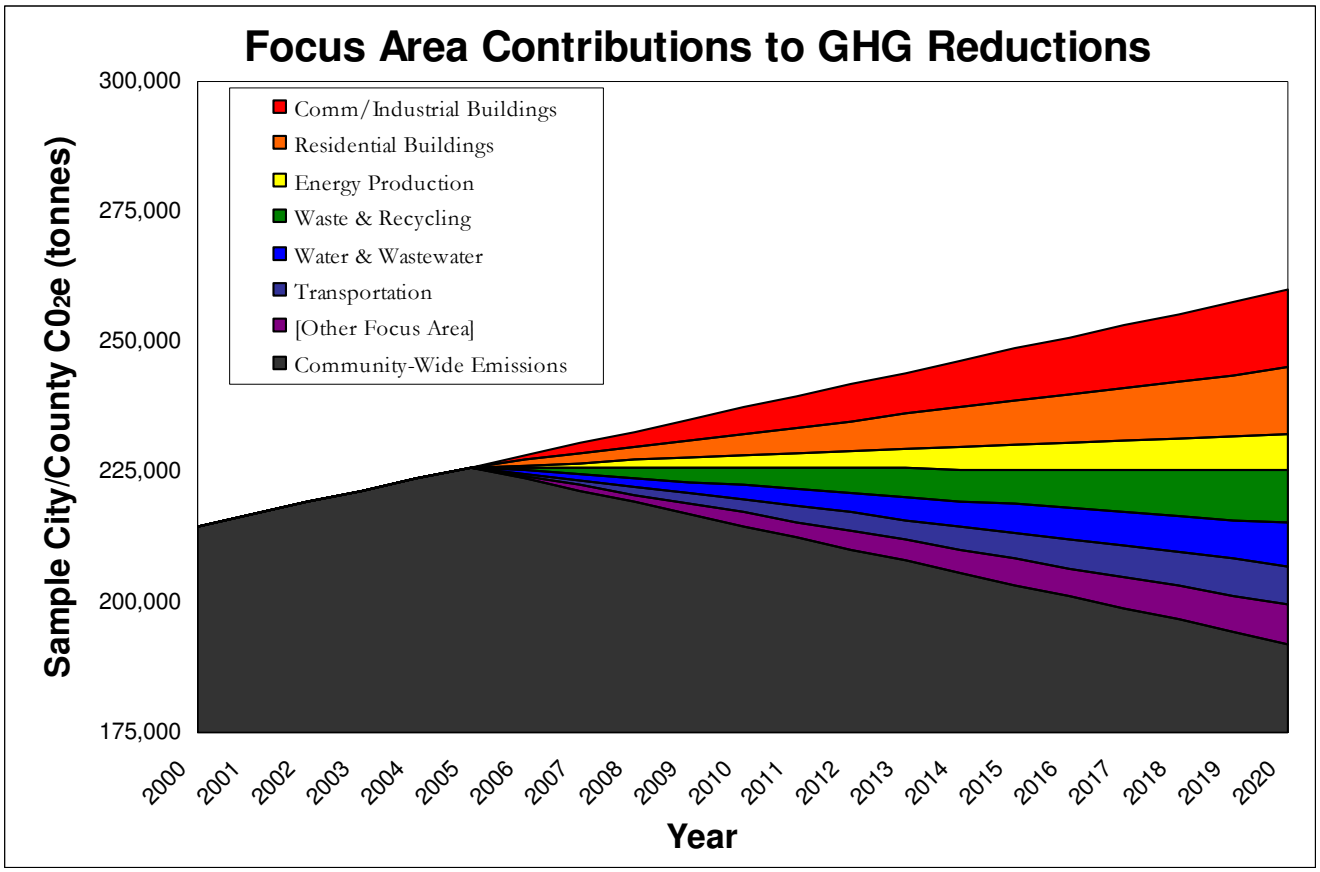
***MTCO2e (Metric tons of CO_2 equivalent)**

The Impact on Emissions

The summary figure below depicts forecasted growth in GHG emissions from [Year] to [Year] and the estimated impact the Climate Action Plan will have on reducing these emissions over time. The reductions are expressed in terms of the estimated impact of each focus area. Taken together, the elements of the Climate Action Plan are capable of reaching [Jurisdiction]'s adopted reduction target – savings are projected to result in total reductions of [XX] MTCO2e by [Target Year].

If using this visual approach, feel free to change the color scheme to colors that suit your plan and local needs. The colors used here are the colors of the rainbow in order (Red, Orange, Yellow, Green, Blue, Indigo, and Violet).

Visualizing GHG Reductions



Climate Change Policy

The Policy Context of Climate Planning

California

Since 2005, the State of California has responded to growing concerns over the effects of climate change by adopting a comprehensive approach to addressing emissions in the public and private sectors. California's role as a global leader was solidified with the passage of the Global Warming Solutions Act of 2006 (AB 32).

AB 32

AB 32 requires the state to reduce its greenhouse gas emissions to 1990 levels by 2020. In December 2007, the California Air Resources Board (CARB) identified the 2020 limit, equal to statewide emissions in 1990, of 427 million metric tons of carbon dioxide equivalent (MMTCO2E) gases. It also requires the California Air Resources Board (CARB) to develop a policy plan for reaching AB 32 emissions reduction goals and to adopt and enforce regulations to implement the plan.

The resulting AB 32 Scoping Plan was adopted by CARB in December 2008. Among the many strategies articulated, it encourages local governments to reduce emissions in their jurisdictions by a degree commensurate with state goals. Given that identifying 1990 emissions levels can be difficult for some local governments, a reduction of approximately 15 percent below "current" levels (this language was used in 2008) is given as a rough equivalency. However, AB 32 stopped short of setting mandatory targets for local government compliance. The state has not set an air quality threshold, though it has the authority to do so through the CARB. California's 35 air districts, which operate independent of the state and CARB, are responsible for enforcing state and federal air pollution reduction laws in their jurisdiction, including AB 32. The air districts can establish threshold levels that are enforceable within their jurisdiction, and some air districts have set significance thresholds which trigger mitigation requirements. These thresholds vary by region.

In addition, AB 32 identifies the following strategies that will impact local governance:

- Develop a California cap-and-trade program.
- Expand energy efficiency programs.
- Establish and seek to achieve reduction targets for transportation-related GHG emissions.
- Expand the use of green building practices.
- Increase waste diversion, composting, and commercial recycling toward zero-waste.
- Continue water efficiency programs and use cleaner energy sources to move and treat water.
- Reduce methane emissions at landfills.
- Preserve forests that sequester carbon dioxide.

Important steps that have already been taken by the state include mandating stronger vehicle emissions standards (AB 1493, 2002), establishing a low-carbon fuel standard (EO # S-01-07, 2007),

mandating a climate adaptation plan for the state (S-EO # 13-08, 2008), establishing a Green Collar Job Council, and establishing a renewable energy portfolio standard for power generation or purchase in the state. The state also has made a number of legislative and regulatory changes that have significant implications for local governments.

SB 97

SB 97 (2007) requires the Office of Planning and Research to maintain greenhouse gas planning guidelines for the California Environmental Quality Act (CEQA). In addition, CARB is tasked with creating energy-use and transportation thresholds for CEQA reviews which, if exceeded, would require local governments to account for greenhouse gas emissions when reviewing project applications.

CEQA

CEQA (California Environmental Quality Act) is a State statute that requires public agencies to evaluate the environmental impacts of discretionary development plans and projects in their jurisdictions. Pursuant to law, the state Office of Planning and Research updated CEQA guidelines to require analysis of climate change in CEQA documents, which came into effect in March 2010. Many jurisdictions are finding that climate change impacts from local government activities are "significant" under CEQA, and are identifying emissions reductions targets and Climate Action Plans (ICLEI Milestones Two and Three) as mitigation measures to reduce climate change impacts to less-than-significant levels.

The California Attorney General's Office provides guidance on when to prepare a Climate Action Plan if the local government intends it to serve as its primary CEQA mitigation strategy for its General Plan:

"If a city or county intends to rely on a Climate Action Plan as a centerpiece of its mitigation strategy, it should prepare the Climate Action Plan at the same time as its general plan update and EIR (Environmental Impact Report). This is consistent with CEQA's mandate that a lead agency must conduct environmental review at the earliest stages in the planning process and that it not defer mitigation. In addition, we strongly urge agencies to incorporate any Climate Action Plans into their general plans to ensure that their provisions are applied to every relevant project."[1]

Furthermore, a local government may elect to incorporate climate mitigation into its General Plan and fulfill CEQA through a fully integrated plan rather than separate efforts.

The Natural Resources Agency added a new provision, Section 15183.5 that became effective in March 2010, which provides a framework for plan-level greenhouse gas emissions reduction plans.[2] An adequate plan must:

- Quantify existing and projected community-wide greenhouse gas emissions over a specified time period;
- Establish greenhouse gas emissions reduction targets over the life of the plan which, if achieved, would render the community's greenhouse gas emissions to be less than significant;
- Identify and analyze the greenhouse gas emissions resulting from specified activities in the community;

[1] Climate Change, the California Environmental Quality Act, and General Plan Updates: Frequently Asked Questions from the California Attorney General's Office. 2011, Jan 26. <http://ag.ca.gov/globalwarming/pdf/CEQA_GP_FAQs.pdf>.
[2] Ibid.

- Identify a suite of specific, enforceable measures that, collectively, will achieve the emissions targets;
- Establish a mechanism to monitor the plan's progress and to require amendment if the plan is falling short;
- Be adopted in a public process following environmental review.

Increasingly, local governments view this approach as a practical necessity, in part because state guidance specifies that lead agencies should consider the extent a project complies with a statewide, regional or local climate action plan in order to assess "significance".[3] Notably, the guidance does not offer a guaranteed safe harbor for such projects – leaving continued uncertainty.

Finally, a local government may claim exemption from CEQA through a Categorical Exemption, assuming that the criteria for exemption are met.[4]

State Renewable Energy Programs

California has the most aggressive Renewable Portfolio Standard (RPS) in the nation, requiring 20% renewable procurement by 2010. The Governor established an even more ambitious target through executive order with the Renewable Electricity Standard (RES).[5] Additionally, the state promotes solar uptake in the private sector with the California Solar Initiative (CSI) regulated by the CPUC's CSI proceedings.

AB 811

AB 811 (2007) authorizes all local governments in California, if they so choose, to establish special districts that can be used to finance energy efficiency, solar, or other renewable energy improvements to homes and businesses in their jurisdiction. As a result of opposition by Fannie Mae and Freddie Mac, federal regulators have effectively put most of the local programs dealing with residential properties on hold. It may take additional federal legislation to get residential programs fully back on track, although programs designed for commercial properties face no similar roadblocks. A handful of programs in California are continuing but at the time of publication, uncertainty remains.

SB 375

SB 375 (2008) revises the process of regional transportation planning by metropolitan planning organizations (MPOs), which are governed by elected officials from local jurisdictions. The statute calls on CARB to establish regional transportation-related greenhouse gas targets and requires MPOs to develop a regional "Sustainable Communities Strategy" (SCS) of land use, housing, and transportation policies that will move the region towards its GHG target, or an "Alternative Planning Strategy" (APS) is the SCS cannot achieve the GHG reduction goals. The statute stipulates that transportation investments must be consistent with the Sustainable Communities Strategy and provides CEQA streamlining for local development projects that are consistent with the Strategy.

[3] Natural Resources Agency. CEQA Guideline Number 15064.4.

[4] California Department of Transportation. Chapter 34 – Exemptions to CEQA. Accessed 2011, Jan 26. < http://www.dot.ca.gov/ser/vol1/sec5/ch34ce/chap34.htm>.

[5] Executive Order S-21-09 authorizes Air Resources Board (ARB) to adopt regulation that all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020

Other Benefits of Climate Protection Measures

In addition to addressing climate change, measures taken to reduce greenhouse gas emissions have other important benefits. The most obvious of these is the potential for significant cost savings. In [Year], [Jurisdiction] spent over [$$$$] on energy to power buildings and fuel its vehicle fleet. Many of the measures in this plan "pay for themselves" quickly by reducing direct costs, such as fuel or energy used, and also indirect costs such as maintenance. For instance, a "right-sized" vehicle fleet is less expensive to purchase and fuel, while also being less costly to maintain. **Add information here about the expected monetary cost/benefit of your Climate Action Plan projects.**

A key strategic side benefit of climate change mitigation activities is enhanced energy security through reduction in total demand. Climate protection measures can also spur business and job growth during the design, manufacture, and installation of energy efficient technologies. Climate change mitigation activities, particularly those related to transportation, help to clean the air by reducing vehicle emissions. Finally, mitigation activities help to engender a greater degree of choice for [Jurisdiction] residents. For instance, more transit options combined with transit-oriented development practices make for a more vibrant, livable community.

In light of the compositional changes already made to Earth's atmosphere, we have already set the planet on a course for some degree of climate change. Many of the actions identified here to mitigate GHG emissions will also help [Jurisdiction]'s government, businesses, and residents to adapt to a changing climate. For example, extreme and prolonged heat waves can put considerable strain on the reliability of energy delivery in peak periods, possibly leading to service disruption during times when cooling is most needed. By increasing efficiency across the [City/County], such service disruptions are less likely and the [City/County] will be able to better cope with those situations. **Remove if needed.** Additional measures aimed solely at climate adaptation, such as modifying flood protection and heat emergency response programs will also be addressed in this Climate Action Plan.

Emissions Reduction Focus Areas

Each of the focus areas within [Jurisdiction]'s Climate Action Plan is explored in the following pages.

In each focus area, a series of objectives with supporting strategies are explored. An "Objective" is a goal, end result, or target that supports a focus area, and a "Strategy" is a means of realizing the objective.

Each focus area draws on the actions of both the local government and [Jurisdiction] residents and businesses, although some areas may be largely one or the other.

Cross-Cutting Objectives & Strategies

If you feel that some strategies do not fit into one particular focus area but instead affect, build on, or are a component of all areas, consider making a "Cross-Cutting Strategies" focus area. This optional focus area can help to call out the importance of a cross-cutting objective or group of strategies. Although embedded in components of other focus areas, calling out cross-cutting strategies or objectives in their own section allows one to set quality thresholds or success metrics for these activities, ensuring that these objectives are observed and done well. Good examples include Public Education and Outreach, Climate Adaptation, or Developing a Green Economy. Otherwise, remove this section. Several strategies have been included in the Cross-Cutting Strategies focus area because they are considered integral to successful implementation of the other [XX] focus areas. **Consider the following if using a cross-cutting section.** Given its broad reach and embedded nature, emission reductions were not calculated for this focus area. Emission calculations are listed for objectives in the other [XX] focus areas, of which these strategies are a part.

Energy efficiency is a critical and common component of this plan. Energy efficiency strategies are woven into all of the focus areas.

Government Operations & Community Objectives & Strategies

Government operations strategies are specific to the internal operations of [Jurisdiction]. They apply to buildings [Jurisdiction] owns or leases, vehicles used to provide services such as police and fire, lighting of

roadways, etc. **List some services.** Community strategies require involvement and participation from citizens. Each strategy is noted as one or both of these.

Emissions Reductions

Calculating expected emissions reductions for each objective requires making assumptions about degree of implementation, technology, and individual behavioral changes several years into the future. The uncertainty associated with these assumptions makes it difficult to assign exact reduction totals to each objective or strategy. **Symbols are a good alternative to listing specific reduction figures since results will vary to some degree. Make this plan your own by choosing your own symbols. Or, if your local government prefers to display actual values to represent GHG reduction potential, it is recommended that you use round figures, so as not to convey a false sense of precision.** To address this uncertainty and provide a simple but useful reference for reduction potential, a series of symbols and percentage ranges has been devised to represent the emission reductions associated with each objective and its strategies:

Symbol	GHG Reduction
	[Small Impact Range]
	[Medium Impact Range]
	[Large Impact Range]

List range estimates appropriate for the scale of your projects. Larger communities have more emissions and therefore larger potential reductions. List values here for association with the symbols.

Specific implementation assumptions and GHG reduction estimates are listed in the Appendix.

New and Existing Strategies

This Climate Action Plan includes a combination of existing policies and programs as well as new ideas based on best practices from around the country. Whether a strategy is new or existing is noted in the strategy heading.

Strategy Implementation Details

Each strategy has associated implementation actions, indicators to track progress, and timelines. **The following is suggested to sync with state policy; however, you may modify these timelines to better suit the implementation timeline of your plan. Remember to include existing actions in your timeline, including those that will be completed in the short-term.** Implementation timelines are broken down into three phases:

- Short-term (e.g., 2011-2012)
- Mid-term (e.g., 2013-2015)
- Long-term (e.g., 2016-2020)

These periods sync with the 2020 target identified in AB 32, making the Plan consistent with the State timelines for implementation.

For each strategy, the [City/County] has assigned performance targets that will provide guidance on our overall progress toward our objectives. These are communicated in the Progress Indicator Timelines for each strategy.

Commercial & Industrial Buildings

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

Energy consumed in commercial buildings and industrial processes account for [XX]% of [Jurisdiction]'s total GHG emissions. Improving the efficiency of our commercial building stock and reducing the energy intensity of the local industrial sector will contribute significantly to achieving [Jurisdiction]'s greenhouse gas reduction target. This chapter focuses on opportunities to retrofit existing commercial and industrial buildings and to ensure that future activities in these sectors are compatible with our community's climate protection goals.

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
CB 1 – Retrofit existing commercial and industrial buildings to achieve a [XX]% reduction in energy use by [Year]	RB 1, EP 1	Y	Both	
CB 2 – Ensure new commercial and industrial construction is built to maximize energy efficiency	CB 1, RB 2	Y	Government	
[Other Objective]	[X]		Government	
[Other Objective]	[X]		Community	

Objective CB 1 – Existing Commercial and Industrial Buildings	
Retrofit existing commercial and industrial buildings to achieve a [XX]% reduction in energy use by [Year]	

Strategy CB-1A EXAMPLE	Partner with local utility companies to ensure commercial properties maximize use of energy efficiency rebate programs			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Community and Buildings Dept	ID Contractors, Appropriate funds	25% Uptake	50% Uptake	80% Uptake

Strategy CB-1B EXAMPLE	Require benchmarking and disclosure of energy use in commercial and industrial buildings over [XX] square feet			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
BOMA, others & Buildings Dept	ID Contractors, Appropriate funds,	25% Disclosure	50% Disclosure	100% Disclosure

Strategy CB-1C EXAMPLE	Establish PACE (AB 811) program and/or partner with utilities to offer on-bill financing for commercial energy efficiency retrofit projects			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Utility, Bldgs & Finance Dept	ID Contractors, Appropriate funds, *legal, financing	$1.2M Funded	$3M Funded	$4M Funded

Strategy CB-1D EXAMPLE	Establish revolving loan fund for industrial energy efficiency project financing			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Community and Buildings Dept	ID Contractors, Appropriate funds, *legal, financing	$400K Funded, 90% Out	$800K Funded – Fully Revolved	$1.6M Funded

Strategy CB-1E EXAMPLE	Launch "Cool Roofs" reflective roofing campaign for commercial properties			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Grant Funded, PW Dept	ID Contractors, conduct outreach	100K sq ft of cool roofs	200K sq ft of cool roofs	300K sq ft of cool roofs

Objective CB 2 – New Construction	
Ensure new commercial and industrial construction is built to maximize energy efficiency.	

Strategy CB-2A EXAMPLE	Enhance building code enforcement and compliance in new commercial buildings, achieve [90]% compliance by [YEAR]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Code Enf Dept, Community	Delegate funding to enforcement, training	60% Code Compliance	75% Code Compliance	90% Code Compliance

Strategy CB-2B EXAMPLE	Enhance building codes to increase energy efficiency in all new commercial buildings by XX% by [YEAR]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Codes Dept	Formal code adoption by Council	10% Increase in Code Efficiency	20% Increase in Code Efficiency	30% Rise in Efficiency

Strategy CB-2C EXAMPLE	Develop local "green code" that allows for high performance green building techniques, align with regional "green code" effort			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Codes Dept, Community	Stakeholder group, ID Contractors, training, outreach	Draft Code	Adopt Code	50% Above Standard Code EE

Strategy CB-2D EXAMPLE	Require all new local government buildings to meet ENERGYSTAR Target Finder score of [XX] or LEED Gold, incorporate "green code" after adoption of code			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
PW Dept	Adopt ordinance, Appropriate funds	Adopt Ordinance	Ensure Compliance	Evaluate Standards

Residential Buildings

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

Energy consumed in residential buildings accounts for [XX]% of [Jurisdiction]'s total GHG emissions. Improving the efficiency of our residential building stock will contribute significantly to achieving [Jurisdiction]'s greenhouse gas reduction target, while saving residents money on utility bills and reducing the need for new infrastructure. This chapter focuses on opportunities to retrofit existing residential buildings, increase the quality of new construction, and to ensure that future activities in these sectors are compatible with our community's climate protection goals.

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
RB 1 – Retrofit existing residential buildings and homes to achieve a [XX]% reduction in energy use by [Year]	EP 1, CB 1	Y	Both	
RB 2 – Ensure new residential buildings and homes are built to maximize energy efficiency	CB-2	Y	Both	
[Other Objective]	[X]		Government	
[Other Objective]	[X]		Community	

Objective RB 1 – Existing Homes	
Retrofit existing residential buildings and homes to achieve a [XX]% reduction in energy use by [Year]	

Strategy RB-1A EXAMPLE	Double the number of homes weatherized through existing programs per year			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
WAP Funding, PW Dept	ID Contractors, Appropriate funds, Investigate Grants	25% increase in weatherization rate	50% increase in weatherization rate	100% increase homes/year

Strategy RB-1B EXAMPLE	Offer financing vehicle to residential sector for energy retrofits (investigate PACE and other options)			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Community, Local Bank, Bldgs, Finance Depts, Utility	ID Contractors, Appropriate funds, Investigate Financing	Program Identification	$4M funded	$8M Funded

Strategy RB-1C EXAMPLE	Increase residential uptake of utility incentives for energy efficiency			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Bldgs Dept & Community	Interface with partner, appropriate marketing funds, conduct outreach	[X]% increase in applications	[X]% increase in applications	[X]% increase in applications

Strategy RB-1D EXAMPLE	Develop and launch program to incentivize renter-occupied and multi-family residential properties to implement energy efficiency measures			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Bldgs Dept, Community Affairs Dept, Community	Appropriate funds, Stakeholders, Plan review	ID Program, Develop Metrics	[Indicator]	[Indicator]

Strategy RB-1E EXAMPLE	[Strategy Statement]			
Status: [Status]	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
[Government/ Community]	[Actions]	[X]%	[X]%	[X]%

Objective RB 2 – New Homes
Ensure new residential buildings and homes are built to maximize energy efficiency

Strategy RB-2A EXAMPLE	Enhance building code enforcement and compliance in new residential buildings, achieve [95]% compliance by [YEAR]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Code Enf Officers, Dept	Formal code adoption by Council	65% Code Compliance	80% Code Compliance	95% Code Compliance

Strategy RB-2B EXAMPLE	Enhance building codes to increase energy efficiency in all new commercial buildings by XX% by [YEAR]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Codes Dept	ID Contractors, Appropriate funds, Investigate Financing	10% Increase in Code Efficiency	20% Increase in Code Efficiency	30% Rise in Efficiency

Strategy RB-2C EXAMPLE	[Strategy Statement]			
Status: [Status]	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
[Government/ Community]	[Actions]	[X]%	[X]%	[X]%

Energy Production

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

Broadly speaking, the use of fossil fuels for energy (including electricity, heating, transportation, and other uses) is the single largest contributor to greenhouse gas emissions and climate change. While California is a strong leader among US states in terms of implementing low or no carbon energy sources, fossil fuels still supply a considerable share of energy for electricity, heating, transportation, and other energy-producing uses. Emissions from fossil fuel combustion for energy, including transportation, represent [XX]% of the community's total GHG emissions. Energy Production is a cross-cutting focus area in that nearly all activities that take place in the community require energy of some sort. While [Local Utility] is working hard to increase the percentage of electricity generated through renewable sources, opportunities also exist for citizens and [Jurisdiction] local government to produce small-scale renewable energy or fuels, offsetting the need for fossil fuels. This focus area is limited to energy production exclusively – objectives and strategies that focus on end use energy efficiency are included in other focus areas. The programs and projects within this focus area are designed to spur local government and community investment in renewable energy sources including those that produce electricity, heat, and mobile fuels.

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
EP 1 – Enhance support to residents for installing small-scale renewable energy systems	CB 1, RB 1	Y	Both	
EP 2 – Supply [XX]% of [Jurisdiction] local government electricity demand via local renewable generation	CB 1	Y	Government	
EP 3 – Promote local production of biofuels and harness waste energy	WR 1, WW 1		Both	
[Other Objective]	[X]		Community	

Objective EP 1 – Facilitating Renewable Energy Investment	
Build local small-scale renewable energy systems and capacity	

Strategy EP-1A EXAMPLE	Encourage community partners to finance and install renewable systems on large-scale private facilities			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Community, Economic Dev Committee	ID Contractors, ID Partners, Convene facilitated dialogue, *legal	150 kW total (include water heating energy)	300 kW total (include water heating energy)	600 kW or equivalent heat energy

Strategy EP-1B EXAMPLE	Establish energy financing districts (AB 811); offer renewable energy system financing to small commercial properties		
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE	
		Short	Mid	Long
Community, Local Bank, Bldgs, Finance, Legal Depts, Utility Experts	Build Financing Stakeholder Group; Identify financing vehicles, scope, appropriate funds/financing; Address legal barriers; Establish Program; Conduct Outreach	300 kW total (include solar water heating energy)	1 MW total (include solar water heating energy)	2 MW total (include solar water heating energy)

Objective EP 2 – Local Government Renewable Energy
Supply [XX]% of [Jurisdiction] local government energy demand via renewable sources

Strategy EP-2A EXAMPLE	Install renewable energy systems on [City/County]-owned facilities such that [20]% of total energy demand of local government buildings is met.		
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
PW Dept	ID Contractors, Appropriate funds,	5%	10%	20%

Strategy EP-2B EXAMPLE	Execute renewable power purchase agreement with [Utility] for 30% of total electricity demand of local government buildings		
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
PW Dept, Utility	ID Contractors, Appropriate funds,	20%	30%	30%

Objective EP 3 – Capture Waste Energy, Promote Biofuels
Install landfill and wastewater methane collections systems, biofuel “incubator”

Strategy EP-3A EXAMPLE	Install landfill gas collection system at [Local Landfill]			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Solid Waste Dept	ID Contractors, Appropriate funds, Investigate Financing	Project Completion	Monitoring	Monitoring

Strategy EP-3B EXAMPLE	Install methane collection system at [Local Wastewater Facility]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Co-owners, PW Dept	ID Contractors, Appropriate funds, Investigate Financing	Project Completion	Monitoring	Monitoring

Strategy EP-3C EXAMPLE	Partner with [Local College] to launch community "biofuel incubator" research and production center			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Economic Dev, Solid Waste Dept, College	ID Contractors, Appropriate funds, Investigate Financing	Produce 2,000 gallons of B100 or E100 per year	Produce 4,000 gallons of B100 or E100 per year	Produce 5,000 gal of B100/E100

Strategy EP-3D EXAMPLE	[Strategy Statement]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline EXAMPLE		
		Short	Mid	Long
Community Only	ID Contractors, Appropriate funds, Investigate Financing	[X]%	[X]%	[X]%

Waste & Recycling

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

[Jurisdiction]'s solid waste is disposed of, primarily, at [Name of Landfill], **provide description of landfill location**. Emissions from decaying putrescible material directly contribute [XX]% of [Jurisdiction]'s total GHG emissions and contribute to emissions in the Transportation sector via hauling of waste to and from facilities and operating). Additionally, embodied energy within the items that we throw away might be harnessed through reuse and recycling of materials. It is in [Jurisdiction]'s long-term interest to expand recycling facilities and enable re-use of construction materials and other goods. This chapter focuses on opportunities to reduce waste, reuse materials, and recycle what can not be reused.

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
WR 1 – Reuse	[X]	Y		
[Objective 2]	[X]			
[Other Objective]	[X]			
[Other Objective]	[X]			

Objective WR 1 – Encourage and Facilitate Reuse of Materials	
Objective [description]	

Strategy WR-1A	Establish "Building Materials Reuse Warehouse" for community construction and demolition use.			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Solid Waste, PW, Bldg Depts	[Description of actions needed]	Convert/open facility	Track materials donated/reused	Evaluate Expansion

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Government	[Description of actions]	Performance	Performance target	Performance

[Objective Number] – Objective Title	[Reduction Potential]
Objective [description]	

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Community	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Both	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

Water & Wastewater Management

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

This section largely pertains to those local governments who own their own water delivery or wastewater services, or are partners in a multi-jurisdictional water delivery and treatment arrangement. It is also possible for local governments to partner with water utilities to accomplish these goals, if privately or otherwise owned or operated.

This focus area does not include the methane collection system; please refer to Energy Production focus area for this project.

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
WW1 – Upgrade the energy efficiency of water delivery and treatment systems by 15%	2	Y	Government	
[Objective 2]	[X]			
[Other Objective]	[X]			
[Other Objective]	[X]			

WW 1 – Decrease the Energy Intensity of Water Delivery/Treatment	
Objective [description]	

Strategy WW-1A	Upgrade the mechanical and electrical systems at [Water or Wastewater Facility]			
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Co-owners, PW Dept	[Description of actions needed]	Performance target	Performance target	Performance target

Strategy WW-1B	Participate in [Utility] energy efficiency incentive programs to upgrade pump efficiency			
Status: New	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
PW Dept	[Description of actions needed]	Performance	Performance target	Performance

[Objective Number] – Objective Title	[Reduction Potential]
Objective [description]	

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Community	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Government Only	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

Transportation

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

Emissions from transportation are a common sight to nearly everyone in [Jurisdiction]. Besides emitting greenhouse gases, transportation fossil fuels also produce a host of criteria air pollutants when combusted, reducing local air quality and affecting our health. Transportation accounts for [X]% of [Jurisdiction]'s total GHG emissions. This chapter focuses on programs and policies to reduce emissions from transportation and includes design-oriented approaches as well as expansion of alternate modes such as walking, biking, or public transportation to and from the most common destinations in [Jurisdiction].

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
[Objective 1]	[X]			
[Objective 2]	[X]			
[Other Objective]	[X]			
[Other Objective]	[X]			

[Objective Number] – Objective Title	[Reduction Potential]
Objective [description]	

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Government Only	[Description of actions needed]	Performance target	Performance target	Performance target

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Community	[Description of actions needed]	Performance target	Performance target	Performance target

[Objective Number] – Objective Title	[Reduction Potential]
Objective [description]	

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Both	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Government Only	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

[Other Focus Area]

Provide a summary of the overall vision, types of actions included in the focus area, and its importance to the overall Plan.

Ideas for further focus areas include: Urban Forestry/Parks, Reducing Embodied or "Life Cycle" Energy (promote the use of low-impact local resources, improve supply chain), Cross-Cutting themes such as Climate Adaptation, Social Equity, or others.

Objective	Supporting Strategies	Supports Adaptation	Community/Government	Reduction Potential
[Objective 1]	[X]			
[Objective 2]	[X]			
[Other Objective]	[X]			
[Other Objective]	[X]			

[Objective Number] – Objective Title	[Reduction Potential]
Objective [description]	

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Government Only	[Description of actions needed]	Performance target	Performance target	Performance target

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: New	Implementation Actions Needed:	Progress Indicator Timeline		
		Short	Mid	Long
Community	[Description of actions needed]	Performance target	Performance target	Performance target

[Objective Number] – Objective Title	[Reduction Potential]
Objective [description]	

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: New	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Both	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

[Strategy Number]	[Strategy description]			[Reduction Potential]
Status: Existing	**Implementation Actions Needed:**	**Progress Indicator Timeline**		
		Short	**Mid**	**Long**
Government Only	[Description of actions needed]	**Performance target**	**Performance target**	**Performance target**

Next Steps

Describe the next steps in the process to implementing your action plan. This may include outreach efforts to stakeholder groups, additional feasibility studies that may need to be taken, and the identification of key partners that will be required for successful implementation.

While some of the actions within the [Jurisdiction] Climate Action Plan are well underway, over the coming months, [Jurisdiction] will engage with community members, businesses, institutions, and other stakeholders through a Climate Action Planning Task Force to prepare for any prerequisite or additional actions needed to begin Plan implementation.

These prerequisite actions include:

- Creating citizen advisory groups for programs that require considerable community engagement.
- Gathering bids for contracted services and equipment.
- Making necessary changes to local policies or existing programs, including staffing.

Describe the steps you intend to take immediately to kick off your programs, and provide ways for citizens to become involved with the Climate Action Plan.

Appendix I Methodology

Include an appendix that details calculation methods and other technical information gathered and used throughout the report.

Document all assumptions made in the quantification of emission reduction potentials.

Please refer to SEEC guidance documents located at http://www.californiaseec.org/ for further information about calculation methods and assumptions useful in the planning or quantification process.

Further resources on the topic of Climate Action Plans include a Climate Action Planning Quick Start Guide and a Sample Climate Action Plan containing sample calculations and methods for a hypthetical Climate Action Plan.

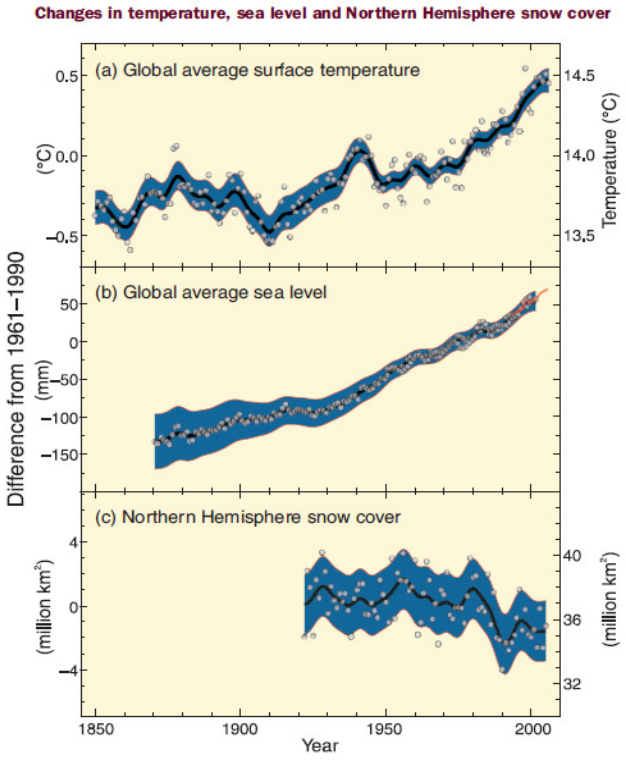
Include other appendices as necessary.

Appendix II
Climate Change Science

The climate change science section should communicate the importance of climate change to the community. Put the issue in local context by adding to the global and regional data presented here. What impacts are anticipated for your jurisdiction?

The Debate on Climate Change is Over

The Intergovernmental Panel on Climate Change (IPCC)'s Fourth Assessment Report affirms that "warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level."[6] Researchers have made progress in their understanding of how the Earth's climate is changing in space and time through improvements and extensions of numerous datasets and data analyses, broader geographical coverage, better understanding of uncertainties and a wider variety of measurements.[7] These refinements expand upon the findings of previous IPCC Assessments – today, observational evidence from all continents and most oceans shows that "regional changes in temperature have had discernible impacts on physical and biological systems."[8]



The Fourth Assessment asserts that "most of the observed increase in global average temperatures

[6] IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

[7] IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[8] IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 7-22.

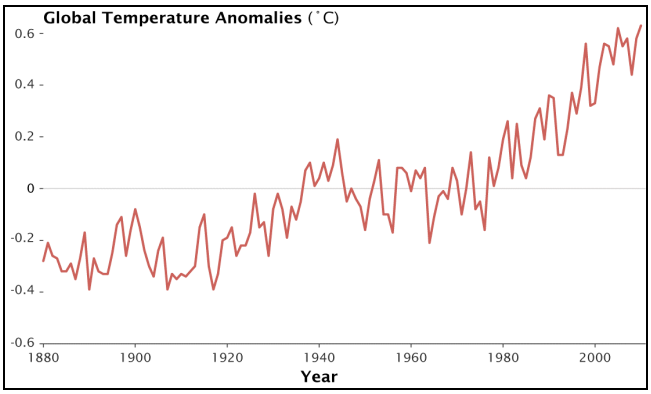
since the mid-20th century is *very likely* due to the observed increase in anthropogenic GHG concentrations. This is an advancement since the [Third Assessment Report]'s conclusion that 'most of the observed warming over the last 50 years is *likely* to have been due to the increase in GHG concentrations.'"

Put another way, "The observed widespread warming of the atmosphere and ocean, together with ice mass loss, support the conclusion that it is *extremely unlikely* that global climate change of the past 50 years can be explained without external forcing and *very likely* that it is not due to known natural causes alone. During this period, the sum of solar and volcanic forcings would *likely* have produced cooling, not warming. Warming of the climate system has been detected in changes in surface and atmospheric temperatures and in temperatures of the upper several hundred [meters] of the ocean. The observed pattern of tropospheric warming and stratospheric cooling is *very likely* due to the combined influences of GHG increases and stratospheric ozone depletion."[9]

In short, the Earth is already responding to climate change drivers introduced by mankind.

Temperatures are Rising Globally

Analysis released in January 2011 by NASA's Goddard Institute for Space Studies shows that global average surface temperatures in 2010 "tied" 2005 as the warmest on record (the difference is smaller than the uncertainty in comparing the temperatures of recent years).[10] The next hottest years, also with very close average temperatures, are 1998, 2002, 2003, 2006, 2007, and 2009. The period from January 2000 to December 2009 is the warmest decade on record, followed by the 1990's, then the 1980's respectively. These remarkable yearly and decadal trends, based on the Goddard Institute's global average surface temperature analysis, GISTEMP, are charted since 1880 and closely resemble the findings of other temperature records and analyses produced by the Hadley Centre and the National Oceanic and Atmospheric Administration (NOAA).[11]



The steady uptick in average temperatures is significant and expected to continue if action is not taken to manage climatic conditions.

Regional and Local Impacts

Because the impacts of climate change vary geographically, it is important to know what effects are specifically expected for your corner of the globe. According to the U.S. Global Change Research Program, the Southwest region of the United States

[9] IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

[10] Goddard Institute for Space Studies, "Research Finds 2010 Tied for Warmest Year on Record," 2011, 18 Jan. 2011, <http://www.nasa.gov/topics/earth/features/2010-warmest-year.html>.

[11] Goddard Institute for Space Studies, "Despite Subtle Differences, Global Temperature Records in Close Agreement," 2011, 18 Jan. 2011. <http://www.giss.nasa.gov/research/news/20110113/>

should expect the following impacts from climate change to occur in the coming years:

- Water supplies will become increasingly scarce, calling for trade-offs among competing uses, and potentially leading to conflict.
- Increasing temperature, drought, wildfire, and invasive species will accelerate transformation of the landscape.
- Increased frequency and altered timing of flooding will increase risks to people, ecosystems, and infrastructure.
- Tourism and recreation opportunities are likely to suffer.
- Cities and agriculture face increasing risks from a changing climate.[12]

In terms of California-specific impacts, the California Energy Commission (CEC) issued a report in 2006 detailing anticipated changes for the state. The report details specific impacts related to several sectors and finds that "climate change impacts will affect all of the sectors considered in this report: sea level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply."[13] The report analyzed low, mid, and high emissions scenarios, noting that "all climate models show increases in temperature, with the aggregate of several model runs containing a range of warming from 2000 to 2100 from about +2ºC to about +6ºC (+3.6ºF to about +10.8 ºF). Increases in temperature alone would impact the California hydrological cycle, with consequences upon the state's water supply, hydroelectric power supply, agriculture, recreation, and ecosystems." Additionally, "Climate change could produce compounding impacts—for instance, in the San Francisco Bay Delta, heightened sea levels and high river inflows from warmer storms would place levee systems in greater jeopardy of flooding."

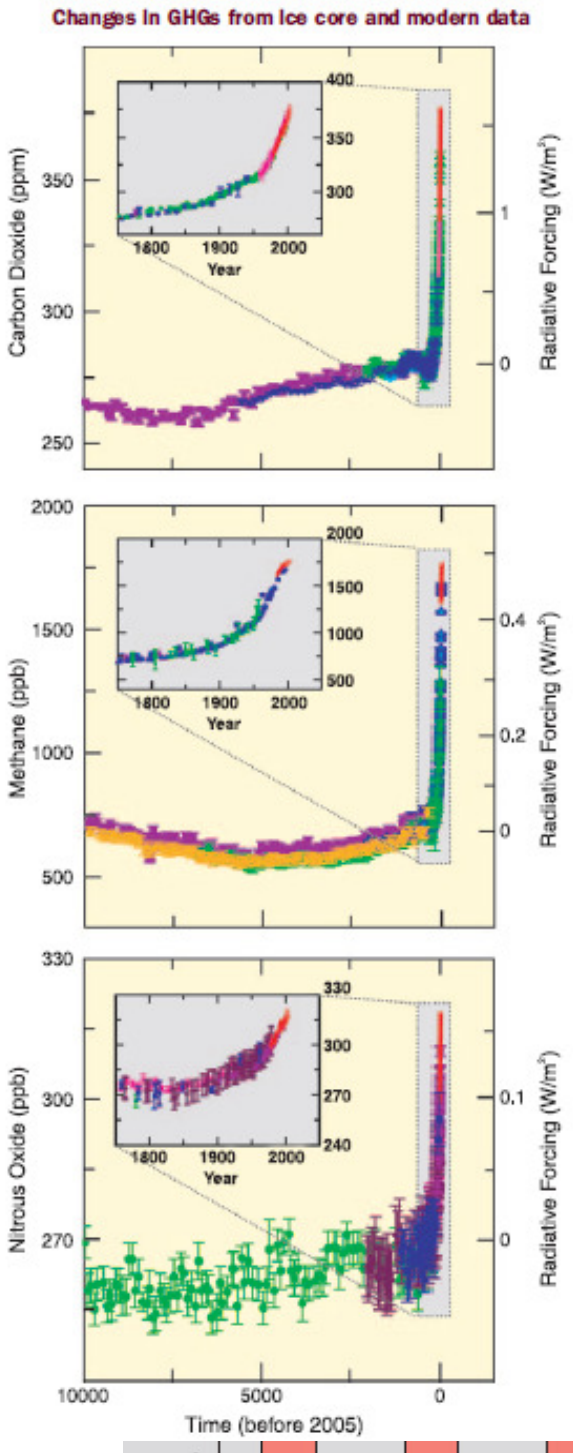
Insert specific local impacts here; use regional or local climate vulnerability assessments.

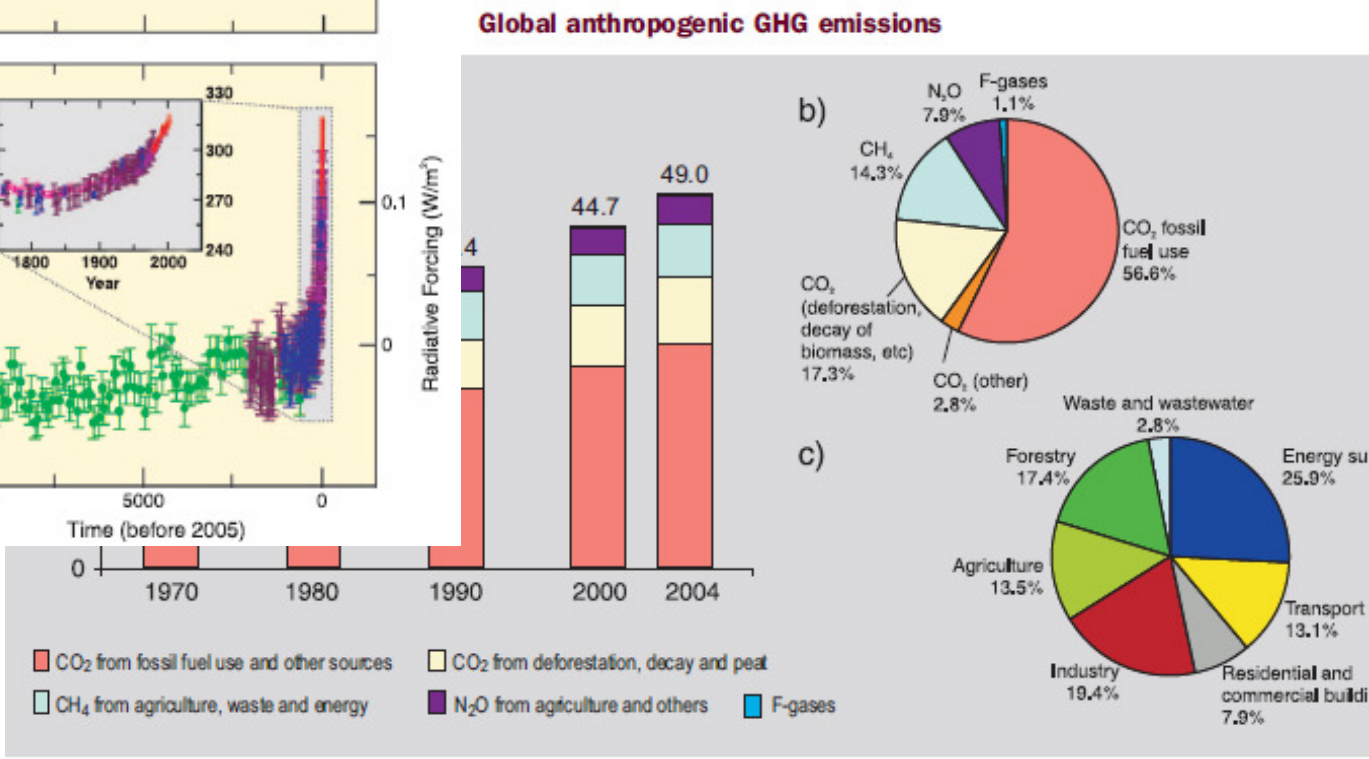
Greenhouse Gas Emissions Must be Reduced

The figures included here, from the IPCC Fourth Assessment, chart atmospheric concentrations of the three most common greenhouse gases over the 10,000 years prior to 2005 (and since 1750 in the inset panels).

[12] Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.

[13] Scenarios of Climate Change in California: An Overview. Dan Cayan, Amy Lynd Luers, Michael Hanemann, Guido Franco, Bart Croes, (eds.). <http://www.energy.ca.gov/2005publications/CEC-500-2005-186/CEC-500-2005-186-SF.PDF>.





and snow cover in the Northern hemisphere in that current levels greatly exceed recorded precedent going back much further than the modern temperature record. The latest monthly average atmospheric CO_2 concentration, for December 2010, as measured at Mauna Loa Observatory, Hawaii, was 389.69 parts per million (ppm).[14]

Global Greenhouse Gas Emissions

According to the Director of the Goddard Institute, Dr. James Hansen, "If the warming trend continues, as is expected, if greenhouse gases continue to increase, the 2010 [temperature] record will not stand for long."[15] In response to the problem of climate change, many communities in the United States are taking responsibility for addressing emissions at the local level. Since many of the major sources of

The recent and massive buildup of greenhouse gases in our atmosphere is conceivably even more extraordinary than changes observed thus far regarding temperature, sea level,

[14] NOAA/ESRL, Dr. Pieter Tans. 2011, 18 Jan. <http://www.esrl.noaa.gov/gmd/ccgg/trends/>.
[15] Goddard Institute for Space Studies, "Research Finds 2010 Tied for Warmest Year on Record," 2011, 18 Jan.

greenhouse gas emissions are directly or indirectly controlled through local policies, local governments have a strong role to play in reducing greenhouse gas emissions within their boundaries. Through proactive measures around land use patterns, transportation demand management, energy efficiency, green building, and waste diversion, local governments can dramatically reduce emissions in their communities. In addition, local governments are primarily responsible for the provision of emergency services and the mitigation of natural disaster impacts. While this Plan is designed to reduce overall emissions levels, as the effects of climate change become more common and severe, local government adaptation policies will be fundamental in preserving the welfare of residents and businesses.

<http://www.nasa.gov/topics/earth/features/2010-warmest-year.html>.