



# 1.0 Introduction

## 1.1 The Changing Climate and the Need for Action

Climate change refers to a long term shift in the temperature, precipitation, and seasonal patterns in the weather. Direct observations around the globe indicate that warming of the earth's climate system is underway (Cal-Adapt, 2012b). Climate change is currently affecting California, where sea level has risen by as much as seven inches along the coast over the last century, increasing pressure on the state's infrastructure, water supplies, and natural resources. The state has seen increased average temperatures, more extreme hot days, fewer cold nights, shifts in the water cycle with less winter precipitation falling as snow, and snowmelt running off sooner in the year (California Natural Resources Agency, 2009). These are only some of the changes that have occurred.

There is consensus among the world's leading climate change scientists that human-generated emissions of heat-trapping greenhouse gases (GHGs) are the primary cause of the warming trend. Projections indicate that atmospheric concentrations of GHGs will continue to increase throughout this century. Data describing atmospheric GHG concentrations over the past 800,000 years demonstrates that concentrations of carbon dioxide (CO<sub>2</sub>), the primary anthropogenic GHG, have increased substantially since pre-industrial times, from approximately 280 parts per million (ppm) prior to the industrial revolution in the mid 1800's to approximately 353 ppm in 1990 and approximately 379 ppm in 2005 (California Natural Resources Agency, 2009).

In 2000, the Intergovernmental Panel on Climate Change (IPCC, 2000) described potential global emission scenarios for the coming century. The scenarios vary from a best-case, characterized by low population growth, clean technologies, and low GHG emissions; to a worst-case, wherein high population and fossil-fuel dependence result in extreme levels of GHG emissions. While some degree of climate change is inevitable, most climate scientists agree that in order to avoid dangerous climate change, atmospheric GHG concentrations must be stabilized at 350-400 ppm (California Natural Resources Agency 2009).

Our natural, economic, and cultural systems are closely tied to the climate. Significant changes in the climate will impact the way people live: the food we grow, our health and safety, the availability of water, our economy, wildlife and vegetation, and many other aspects of our lives. Preparation of a Climate Action Strategy (CAS) is an opportunity for the community to review the local activities that contribute to GHG emissions, to consider changes we can make to decrease our local contribution to climate change, and to plan the community response to the local impacts that will occur as climate change progresses.

## 1.2 Purpose of the Climate Action Strategy

Efforts to reduce human contributions to climate change are underway in California at the state, regional and local levels. Each level of government has a particular role in the overall effort. The CAS serves as a framework for the actions that the County of Santa Cruz and the unincorporated community can take to both lessen our contribution to climate change and prepare for the impacts when they do occur. In addition to guiding County government actions, the CAS is intended to inspire non-government community organizations in their efforts to address climate change, and to identify opportunities for partnerships with other government agencies and community groups.

The CAS outlines a course of action to reduce GHG emissions produced by governmental operations and community activities within unincorporated Santa Cruz County. Implementation of the CAS will build on the fact



that Santa Cruz County has already met the 2020 emissions reduction target recommended by the state<sup>1</sup> and will set the County on a path toward reducing emissions to 59 percent below 2009 levels by 2050.

This document also describes the particular ways in which Santa Cruz County may be vulnerable to impacts of climate change, and suggests adaptation strategies for further consideration and implementation. Adaptation to climate change will be an ongoing process as the type and severity of potential impacts become more clear. While it is important to position County government and the community to plan for the changes that may occur, to make current decisions with consideration and understanding of how conditions may change as climate change proceeds, and to respond to impacts when they do occur, conditions will change gradually, and therefore there is time to form the partnerships and collect information that will contribute to a well planned, adaptive response.

### 1.3 California Legislative Context

In 2005 Governor Schwarzenegger signed Executive Order S-3-05, proclaiming that California is vulnerable to the effects of climate change, including reduced snowpack in the Sierra Nevada Mountains, exacerbated air quality problems, and sea level rise. To address these concerns, the executive order established targets for total GHG emissions which include reducing GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

In 2006 Governor Schwarzenegger signed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce statewide GHG emissions to 1990 levels by 2020. AB 32 does not set reduction requirements for the year 2050.

In 2008 the California Air Resources Board (CARB) approved the “Climate Change Scoping Plan”, which outlines the state’s plan to achieve GHG reductions in California required by AB 32. The Scoping Plan describes the strategies California will use to reduce GHG emissions by 169 million metric tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e)<sup>2</sup>; a level that is approximately 30 percent below the state’s

<sup>1</sup> Largely due to the cessation of manufacturing activity at the Davenport cement plant. See emissions inventories in Appendix G.

<sup>2</sup> There are many gases that contribute to the greenhouse effect, including CO<sub>2</sub> (Carbon Dioxide), CH<sub>4</sub> (methane), NO<sub>2</sub> (Nitrogen Dioxide) and others. Some of these gases are more powerful modifiers of the atmosphere than others. Therefore, the term CO<sub>2</sub>e (carbon dioxide equivalent) will be used throughout this report as the standard measurement for greenhouse gas accounting. For example, CH<sub>4</sub> is 21 times more powerful than CO<sub>2</sub> as a greenhouse gas, and therefore one unit of CH<sub>4</sub> may be expressed as 21 CO<sub>2</sub>e.

*California Climate Policy Summary*

**Executive Order S-03-05.** The initial push for greenhouse gas reduction was set in motion by Executive Order S-03-05 in 2005, which established greenhouse gas emission reduction targets.

**AB 32 – Global Warming Solutions Act.** In 2006 the California legislature passed and the Governor signed Assembly Bill (AB) 32, known as the California Global Warming Solutions Act. The law established a comprehensive program to achieve quantifiable, cost-effective reductions of greenhouse gases on a scheduled basis. It required the California Air Resources Board (ARB) to develop regulations and market mechanisms that would ultimately reduce California’s greenhouse gas emissions by 25 percent by 2020. It required the ARB to adopt a plan by January 1, 2009, indicating how emission reductions would be achieved from significant greenhouse gas sources, and to adopt regulations by January 1, 2011 to achieve maximum technologically feasible and cost-effective reductions in greenhouse gas. Mandatory caps would be set in 2012 for significant sources.

**SB 97 – CEQA Guidelines for Mitigating Greenhouse Gas Emissions.** Also in 2006 the legislature passed Senate Bill 97 which directed the Governor’s Office of Planning and Research (OPR) to develop draft CEQA Guidelines “for mitigation of greenhouse gas emissions for the effects of greenhouse gas emissions by July 1, 2009. The CEQA Guidelines Amendments, adopted by the California Natural Resources Agency on December 30, 2009, provide guidance to public agencies regarding analysis and mitigation of greenhouse gas emissions in draft CEQA documents.

**SB 375 – Sustainable Communities and Climate Protection Act.** In 2008 the legislature passed SB 375 which built upon AB 32 by connecting the reduction of greenhouse gas emissions from cars and light trucks to regional and local land use and transportation planning. SB 375 requires the California Air Resources Board to establish greenhouse gas emissions reduction targets for each region, and each metropolitan planning organization (MPO) to create a Sustainable Communities Strategy (SCS) as part of the Regional Transportation Plan (RTP) to meet regional emissions reduction targets.

Source: State of California 2012a



projected 2020 emission level under a “business-as-usual” scenario. The Scoping Plan also identifies recommended GHG reductions and strategies to achieve the reductions for each sector, or category of activity, in the state’s GHG inventory. The key elements of the State of California Climate Change Scoping Plan strategies include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California’s clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administration costs of the state’s long-term commitment to AB 32 implementation

(California Air Resources Board, 2008).

The state acknowledges that local government will play an important role in achieving California’s long-term GHG reduction goals. Cities and counties have sole or partial jurisdiction over a wide range of factors that will affect GHG emissions within the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas sectors. In the Scoping Plan, CARB encourages local governments to adopt reduction targets for municipal operations emissions and community-wide emissions that parallel the state’s climate protection efforts. CARB has also provided guidance for cities and counties to reduce community-wide emissions to 15 percent below 2005 levels by 2020.

Governor Arnold Schwarzenegger signed Executive Order S-13-08 on November 14, 2008. The order called on state agencies to develop California’s first adaptation strategy to identify and prepare for these expected climate impacts. In 2009, California adopted a statewide Climate Adaptation Strategy that summarizes climate change impacts and recommends adaptation strategies across seven sectors: Public Health, Biodiversity and Habitat, Oceans and Coastal Resources, Water, Agriculture, Forestry, and Transportation and Energy. The 2009 California Climate Adaptation Strategy was the first to use downscaled climate models to more accurately assess statewide climate impacts as a basis for providing guidance for establishing actions that prepare, prevent, and respond to the effects of climate change.

## 1.4 Scope of the Climate Action Strategy

The first step in developing this strategy was the preparation of detailed inventories of GHG emissions produced by County government and community activities. The inventories establish the current, or baseline, level of GHG emissions. The inventories also identify which activities produce the largest share of emissions, so that efforts to reduce emissions can be focused effectively. The Santa Cruz County inventories were accepted by the Board of Supervisors on January 24, 2012.

By analyzing the baseline emissions and making reasonable assumptions about population growth and other factors, it is possible to estimate future emissions. Once an estimate, or projection, of future emissions is in place it is possible to set realistic goals for reducing emissions. Specific targets are helpful to foster government and community commitment and to guide planning and implementation. The emission reduction targets in the CAS apply to both County government operations and the unincorporated County as a whole. The inventories and the



forecast of future emissions are benchmarks against which the County can measure progress toward the targets set out in this CAS.

The CAS articulates a broad strategy for reaching emission reduction goals, and then goes further to identify the individual programs, policies, and initiatives that, together, will move County operations and the community toward the goals. Strategies are included to reduce emissions in the major focus areas of transportation, energy, and solid waste. These strategies represent current thinking, and there are many more possible actions and ways in which the community may choose to respond to climate change. It is expected that this document will be updated regularly, and that the strategies section of this document will evolve as the strategies are tested and additional ideas are suggested.

The CAS identifies the parties that would carry out the various emissions reduction and adaptation strategies, with performance indicators for most strategies. The GHG inventories will be updated periodically in order to measure whether strategies are on track to produce the reductions that have been forecast. As data is collected and community partnerships are expanded, the County will work with the responsible parties and the public to add, subtract, and modify the strategies as needed to meet our emissions reduction goals.

There is growing recognition that climate change is already underway and the scientific research indicates that additional impacts are inevitable even with mitigation efforts (California Natural Resources Agency 2009). Efforts to reduce GHG emissions are intended to mitigate the severity of climate change. Adaptation refers to resilience and the ability to respond to the impacts when they occur. Both mitigation and adaptation are necessary. Santa Cruz County has already begun planning for climate change through the Integrated Regional Water Management Plan and other activities, including participation in the Monterey Bay Sea Level Rise Vulnerability Assessment. The CAS describes these projects and the additional planning required to complete a comprehensive strategy to reduce the vulnerability of the County's natural and human systems, including our water supply, public infrastructure, economy, coastal resources, wildlife and vegetation, health and overall quality of life.

## 1.5 Community Participation

Ideas and feedback from the community, both from groups that are involved in climate action work and the general public, contributed significantly to this document. In addition to presentations of the Preliminary Draft CAS to the Board of Supervisors and the County Commission on the Environment at noticed public hearings, the CAS was the subject of a community meeting and meetings with local organizations working in the climate action arena and with representatives of agriculture, including the Santa Cruz County Farm Bureau and University of California Cooperative Extension. There was outreach to the business community in the context of renewable energy and energy efficiency financing, which included local financial institutions, solar installers, the Chamber of Commerce, and commercial property owners. A web page has also been created, which includes a brief explanation of the CAS, a link to the document, and an online tool for providing feedback called "Open Town Hall".

The comments from the community and focus group meetings are listed in Appendix F, which also indicates the additions and modifications that were made in response to the comments. The CAS has been expanded from the scope of the Preliminary Draft to include information on agricultural emissions and the role of forest lands in carbon sequestration, to include Appendix G which gives additional detail about the process of creating the emissions inventory, and, in recognition of the importance of planning for the community to become more resilient to the effects of climate change, the CAS now includes a vulnerability assessment (Chapter 5), risk analysis (Chapter 6) and strategies for adaptation (Chapter 7).

This document benefitted from the fact that the City of Santa Cruz was completing a public comment process on climate action just as this study was initiated. The results of the City's process assisted with anticipating the community's interests with respect to climate action planning. It also furthered the goal of having a generally



consistent approach to climate change throughout the County, which will be especially useful as we move forward with cooperative efforts with partner cities and other organizations and institutions.