



Executive Summary

Californians are already experiencing impacts from climate change (California Natural Resources Agency, 2009), and a wide variety of impacts are likely to be felt with increasing magnitude as the concentration of greenhouse gases (GHGs) in the atmosphere continues to rise (City of Santa Cruz, 2011). The first portion of this Climate Action Strategy (CAS) reports the results of the GHG emissions inventory for Santa Cruz County, proposes targets for GHG reduction, and outlines strategies and implementing actions to achieve the targets. The second portion focuses on vulnerability assessment and strategies for adapting to the types of impacts that are likely to occur in Santa Cruz County. The CAS incorporates input from the local community and non-governmental agencies that are working to mitigate and respond to climate change.

GHG emissions inventories were prepared for County government operations and for community activities for 2005 and updated for 2009. Total emissions for government operations in 2009 were approximately 34,000 metric tons of CO₂ equivalent (CO₂e), a decrease of 12 percent from 2005. Total emissions for community activities were approximately 1,030,000 metric tons in 2009, a decrease of more than 50 percent from 2005. The dramatic decrease in community emissions reflects the closure of the Davenport cement plant, which accounted for approximately 90 percent of the commercial/industrial emissions in 2005. The inventories indicate that 70 percent of the community emissions in 2009 were generated by the transportation sector. A separate, simplified inventory of GHG emissions from agricultural activity was prepared for 2011. Agricultural emissions other than electricity emissions were in the range of 17,000 metric tons of CO₂e. This represents, at most, two percent of GHG emissions countywide (2009 data).

State legislation requires California to reduce GHG emissions to 1990 levels by 2020. Based on our 2005 community emissions inventory, 1990 emissions levels for Santa Cruz County were estimated. Santa Cruz County has already met the target for 2020 due to the closing of the Davenport cement plant. The State has also set a long-term reduction target for 2050, which is 80 percent below 1990 levels. This CAS incorporates the two state targets and sets an interim target for 2035. A “business as usual” estimate of future emissions is used to gauge the amount of effort required to meet the reduction targets.

GHG reduction strategies are proposed for the three sectors with the highest emissions: transportation, energy, and solid waste. The amount of emissions reductions that can be expected from each strategy is estimated. Calculations indicate that the emissions targets for 2035 and 2050 can be met, but that a sustained commitment to full implementation of the strategies will be required. The largest reduction will come from state and federal standards for fuel efficiency and vehicle emissions and from the California renewable energy portfolio standard (58 percent), followed by a cleaner energy supply from Community Choice Aggregation (CCA) if that type of regional energy authority is formed (22 percent), energy efficiency (9 percent), transportation and land use planning (5 percent), green business (3 percent), and electric vehicles (3 percent). If a CCA is not feasible the gap may be closed with greater reductions from other strategies, including a method to provide incentives for local renewable power and energy conservation similar to what a CCA would provide. Priority for implementation will be a function of the estimated potential for emissions reduction, cost to implement, and co-benefits of each strategy.

A plan for monitoring the implementation of emissions reduction is introduced, which includes identifying the group with responsibility for implementation, periodic reporting, and a recommendation for updating the GHG emissions inventories every five years.

A vulnerability assessment was prepared to identify the conditions that may occur in Santa Cruz County as a result of the various components of climate change (increasing temperature, rising sea level, and shifts in the



precipitation regime) and the locations, infrastructure and economic sectors that are particularly vulnerable to negative impacts.

The assessment identifies the coastal areas that are most susceptible to increased flooding, storm surge, beach and coastal bluff erosion from winter storms. Winter storm damage may become more frequent than in the past as a result of heightened sea levels persisting longer as sea level rises (Cayan et al., 2008; Cloern et al., 2011), and precipitation that is concentrated in fewer months each year (Flint, L.E., and Flint, A.L., 2012). The analysis is based on 16–66 inches (42–167 cm.) of sea level rise by 2100, as forecast by the National Academy of Sciences (National Research Council, 2012). Inundation, rising groundwater, and increased saltwater intrusion into groundwater will also affect low-lying areas. The systems that will be most affected are residential coastal property, wastewater treatment infrastructure, coastal roads and bridges, beaches, coastal and wetland ecosystems, and water supply from coastal wells.

The vulnerability assessment also identifies potential effects of precipitation changes and increased temperature of between 3.6–7.2 degrees Fahrenheit (2–4 degrees Celsius) (Flint, L.E., and Flint, A.L., 2012) on water supply, wildfire, biodiversity, and public health. Particular attention is given to the significant decrease in redwood habitat that may occur, especially if the current trend of decreasing coastal fog continues (Flint, L.E., and Flint, A.L., 2012).

Tourism and agriculture, two top revenue producing and job generating sectors of the local economy, are closely tied to the climate and are therefore vulnerable to climate change. Tourism relies on beaches, coastal attractions, redwoods, and vulnerable infrastructure for access to and around the coast. Agriculture will be affected by increases in temperature, changing pest patterns, changing fog dynamics, and increased potential for both flood and drought.

A risk analysis was performed to determine which impacts from climate change present the greatest risk to people and to the natural and built environments. In the short to intermediate term (2010–2050) water shortage was identified as the largest risk. In the intermediate to long term (2050–2100) rising water table, coastal bluff erosion, and increased flooding and landslides join water shortage as the greatest risks.

Eight “climate adaptation goals” are articulated as a guide for evaluating adaptation strategies. Specific adaptation strategies are proposed that include new actions as well as acknowledgement of existing plans and programs, which, while not explicitly about climate change, address the salient issues. Some proposed strategies emphasize avoidance of hazards while others focus on future planning efforts and specific engineering solutions to protect existing development. However, all emphasize building connections among people and among organizations to accomplish the climate adaptation goals in a framework of partnership.

It is expected that this CAS will be modified periodically as scientific research progresses, new information becomes available and new ideas and priorities are brought forward as more people become involved in responding to climate change in Santa Cruz County.



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