



June 1, 2009

*Executive Summary Revised June 18, 2009*

*This page left intentionally blank for double sided printing.*

# Call to Action

---

**“Delay is no longer an option. Denial is no longer an acceptable response. The stakes are too high; the consequences too serious.”**

-Barack Obama on Climate Change  
November, 2008

There is no longer any doubt in the international scientific community that human induced climate change is real. Heat trapping emissions released by fossil fuel use, deforestation, industrial processes, and other human activities are causing a warming of global average surface temperatures. This temperature rise is associated with a host of impacts that will significantly alter human life including:

- Increased water stress and frequency of drought in mid-latitudes
- Increased species extinction and range shifts
- Decreased agricultural productivity
- Increased damage from floods and storms
- Increased rates of respiratory and infectious disease, and mortality from heat waves, floods, and droughts<sup>1</sup>

The good news is that technical solutions to the climate crisis exist. We have low-carbon energy sources. Better land management and agricultural practices exist. There are alternative processes and materials that can reduce the impact of industry. Moreover, human ingenuity is constantly producing new approaches to providing the goods and services we need to prosper at a lower environmental cost. However, to reduce emissions at a scale necessary to avoid the most catastrophic impacts above, it will take a concerted effort at all levels to overcome cost and political barriers to the effective implementation of both existing and to-be-developed solutions.

Federal policy must be developed to create a U.S. reduction strategy that is compatible with global initiatives and one that demonstrates leadership. Regional policies and commitments are critical to the success of reduction strategies at the lowest cost, and the implementation of reform in such areas as transportation and energy, which are frequently provided at a regional scale. Local governments have a great deal of responsibility for the implementation of climate change mitigation strategies because many planning, infrastructure, and investment decisions happen at the local level. Local governments also have a unique ability to engage citizens and support individual efforts. Private businesses must recognize the triple bottom line and take voluntary actions to support mandatory ones. Finally, individual citizens – by civic engagement and personal behavior – have some of the greatest responsibility and power to affect change. Each one of us is capable of protecting the health and happiness of future generations.

With this sense of urgency and collaboration in mind, the City of Hayward has developed this Climate Action Plan. We sincerely appreciate the efforts of each individual that tackles climate change, at every level, and are grateful to all who aid in the successful implementation of this Plan.

---

<sup>1</sup> International Panel on Climate Change, 2007. “Climate Change 2007: Synthesis Report – Summary for Policymakers.” [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf)

# 10 Steps to Reduce your Carbon Footprint and Save Money

From CoolClimate.org

## 1. Change your commute!

Did you know that one third of the CO<sub>2</sub> produced in the US is from the transportation of people or goods? Pick one day a week to walk, bike, take public transportation or carpool to work or when you're running errands. If possible, live close to your workplace. When driving, remember to combine several car trips into one trip and avoid idling. Additionally, you can get better fuel efficiency by following the speed limit. Exceeding the speed limit by just 5 mph during highway travel results in an average fuel economy loss of 6%.

## 2. Be a better consumer!

Did you know that the average American generates about 4.4 lbs of trash each day? To reduce the amount of trash you generate, follow these few easy steps. Use re-usable coffee mugs and shopping bags. If you forget your mug or bag at the store, buy a new reusable mug or bag and keep the extra one in your purse or car for use the next time you're out. Alternatively, set aside \$1 each time you forget your mug or bag; depending on your memory, you'll have enough funds to purchase a reusable item sooner or later. Also, reuse as many things as possible and recycle at home, work, and school.

## 3. Shop local!

The shorter the distance your food travels to your plate or that product travels to your home, the fewer greenhouse gases are produced. Declare one day a week "Local Day" and eat foods produced within 50 miles of your house.

## 4. Dry-up Household Water Consumption!

Did you know that water-related energy use consumes 19% of California's electricity, 30% of its natural gas, and 88 billion gallons of diesel fuel every year? To reduce your water consumption at home, turn off your water when it's not being used, take shorter showers, stop unseen leaks by reading your meter, install low-flow shower heads and aerators on your faucet, install and use water efficient landscaping and irrigation methods (for example, plant drought tolerant plants and/or install permeable surfaces and drip irrigation systems), and use EnergyStar appliances.

## 5. Unplug it!

Did you know that appliances, chargers, home theater equipment, stereos and televisions use electricity even when their power is "off"? Eliminating this "leaking" electricity could save you 6-26% on your average monthly electricity bill. Take a walking tour of your home and unplug seldom-used appliances and install power strips so that the power to frequently used items can be easily turned off.

## 6. Change the lights!

Replace any incandescent light bulbs that remain in your home with compact fluorescent lights (CFLs). Replacing one incandescent light bulb with a CFL can save \$30 or more in electricity costs over the bulb's lifespan.

## 7. Set your Thermostat for the Season!

Set your thermostat in winter to 68° or less during the daytime, and 55° before going to sleep (or when you're away for the day), to save 5-20% of your space heating costs. During the summer, set thermostats to 78° degrees or more to save 5-20% of your cooling costs. For an easy fix, purchase an inexpensive programmable thermostat that makes these changes for you.

**8. Increase Energy Efficiency at home!**

Did you know that you can save up to 350 lbs of CO<sub>2</sub> and \$150 per year at home by simply keeping air filters clean? To determine more ways to increase energy efficiency, take advantage of free home energy audits offered by many utility companies. When you are ready to purchase an appliance, ensure that you purchase an EnergyStar appliance. To reduce carbon emissions associated with energy use, install or purchase alternative energy for your electricity needs.

**9. Stop Unwanted Services!**

Did you know that junk mail production in the US consumes as much energy as 2.8 million cars? Stop your junk mail at [www.directmail.com/junk\\_mail](http://www.directmail.com/junk_mail). Stop unwanted catalogs at [www.catalogchoice.org](http://www.catalogchoice.org).

**10. Get your friends and families to reduce their carbon emissions!**

## Acknowledgments

---

### Funding

The preparation of this Climate Action Plan was funded in part by a grant from the Bay Area Air Quality Management District. The City of Hayward is grateful to the District for their support.

### The Hayward Community

For their participation in community meetings and thoughtful suggestions.

### Hayward City Council

Mayor Michael Sweeney  
Kevin Dowling  
Barbara Halliday  
Olden Henson  
Anna Laveria May  
Bill Quirk  
Francisco Zermeño

### Planning Commission

Mary Lavelle  
Rodney Loché  
Elisa Marquez  
Julie McKillop  
Al Mendall  
Marvin Peixoto  
Christopher Thnay

### City Council Sustainability Committee

Mayor Michael Sweeney  
Olden Henson  
Bill Quirk  
Rodney Loché  
Julie McKillop  
Al Mendall  
Doug Grandt

### City Staff

Vera Dahle-Lacaze, Solid Waste Manager  
Erik Pearson, Senior Planner  
David Rizk, Director of Development Services  
Tiffany Roberts, Planning Intern

### Project Consultants

HDR Engineering/Brown Vence & Associates (HDR/BVA)  
Lauren Casey, John Deakin, Heidi Endsley, Heidi Hauenstein, Emily Leslie, Linda Stoll

### Town-Green

Steve Coyle, Daniel Dunigan

# Executive Summary

---

## Introduction

The City of Hayward and its citizens recognize that climate change poses a potential threat to the community and to the larger environment. The City and its citizens also recognize that activities taking place within the City result in the release of the heat-trapping global warming gasses that contribute to climate change. Hayward, therefore, wishes to take a stance against climate change by reducing the amount of greenhouse gas (GHG) emissions from activities taking place within the City.

Hayward made this intention clear in 2005, when the Mayor of Hayward signed the U.S. Conference of Mayors Climate Protection Agreement, which states, "We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities."<sup>2</sup> In June 2006, the City joined ten other local governments in Alameda County participating in the Alameda County Climate Protection Project (ACCPP). By joining ACCPP, Hayward embarked on an ongoing coordinated effort to reduce the emission of gasses that cause global warming. ACCPP was launched by the Alameda County Waste Management Authority & Recycling Board (StopWaste.Org) in partnership with the Alameda County Conference of Mayors and ICLEI - Local Governments for Sustainability (ICLEI).

The Climate Action Plan (CAP) provides a roadmap for achieving a measurable reduction in GHG emissions; so adopting the CAP will be a discernible step towards emissions reductions. The CAP recommends GHG emissions targets that will align Hayward's reduction targets with those of the State of California and presents a number of strategies that will make it possible for the City to meet the recommended targets. The CAP also suggests best practices for implementing the Plan and makes recommendations for measuring progress.

The CAP will be implemented over an extended period of time. Hayward recognizes that it may not be possible to implement some of the ideas presented in the Plan with the current economic conditions. Nevertheless, it is important to keep ideas on the table that could make a cost-effective contribution to reducing emissions at some future time in the life of the Plan.

## Hayward's Approach to Climate Protection

Hayward has adopted ICLEI's Cities for Climate Protection methodology for managing GHG emissions. This performance-based methodology provides five milestones to assist local governments in developing and implementing local approaches for reducing global warming. The milestone process consists of the following five milestones:

- Conduct a baseline emissions inventory and emissions forecast
- Adopt an emissions reduction target
- Develop a Climate Action Plan for reducing emissions
- Implement policies and actions that will reduce emissions
- Monitor and verify results

---

<sup>2</sup> US Conference of Mayors Agreement <http://www.usmayors.org/climateprotection/documents/mcpAgreement.pdf>

ICLEI assisted Hayward in completing a baseline emissions inventory (Milestone 1) in 2006, and subsequently updated the inventory in June 2008. The inventory is summarized in Section 2 and details are presented in Appendix A. Milestone 2 (adopting targets) and Milestone 3 (develop Climate Action Plan) will be completed when this Climate Action Plan is adopted by the Hayward City Council. This Plan also includes recommendations on how to achieve the fourth and fifth milestones: implementation, monitoring, and verification.

In addition to signing on to ACCPP and developing this CAP, the City of Hayward has already adopted a number of programs that will help reduce emissions. A summary of these programs, including the Private Development Green Building Ordinance, the Environmentally Friendly Landscaping Guidelines, and policies supporting transit-oriented development, is provided in Section 1 of the CAP.

## Overview of the Climate Action Plan

### Purpose of the Plan

The purpose of the CAP is to provide direction for the community's efforts to reduce greenhouse gas (GHG) emissions in the coming decades. The Plan recommends specific actions that the City can take to meet its emissions reductions targets. With the Plan as a framework, the City can make informed decisions about which actions should be implemented immediately, and which actions are better suited for implementation at some time in the future.

Because the Plan is intended to be implemented over an extended period, it is important to realize that the costs and benefits of implementing specific actions will change over time due to changes in economic conditions, new and/or improved technology, changes in public opinion, or for other reasons. Many of the recommended actions will require public investments that may be difficult to justify in the current economic climate, but may be easier to justify at some future time. This means that although a proposed emissions reduction action may seem impossible to implement today, it should not be eliminated from the list forever. Instead, those actions can be retained as potentially valuable reduction actions that may prove feasible and be implemented at some time in the future.

### How the Draft Plan was Developed

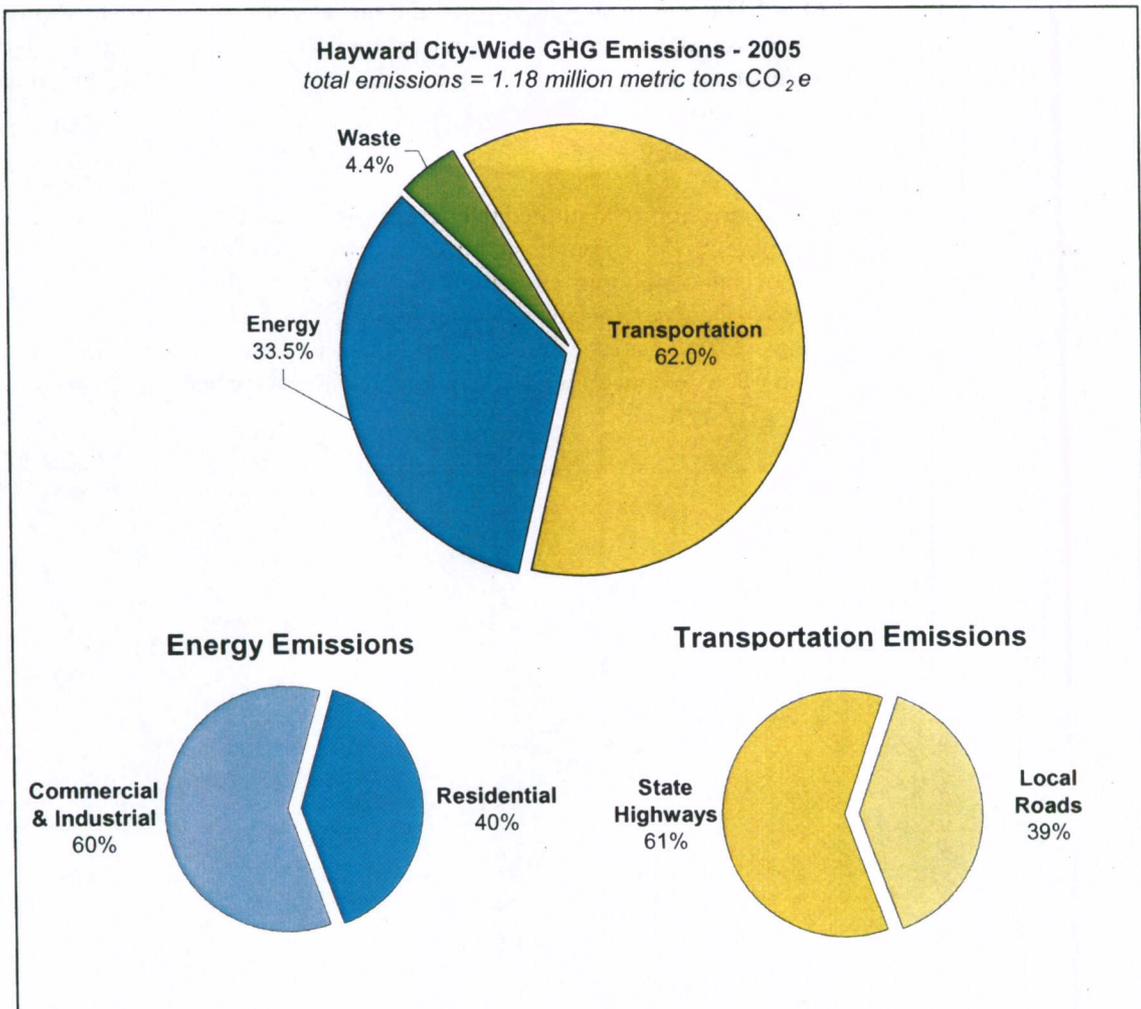
City staff and its consultants worked with members of the community, elected officials, and representatives from various departments within the City government to develop the CAP. In July 2008, the City hosted a public workshop to solicit ideas for the Plan. Based on feedback received from the community during and after the workshop, the City and its consultants developed a list of recommended actions. This list of potential actions was also reviewed with City staff, and the proposed actions were analyzed in more detail. Emissions savings resulting from these actions were estimated, and assessments were made of how easy or difficult it would be to implement each action. A draft was reviewed by City staff in early 2009, and was circulated for public comment in February and March 2009. A community workshop to discuss the Draft CAP and to solicit feedback from the community was held on March 19, 2009.

### Plan Outline

This CAP recommends nine strategies to guide the City's effort in reducing GHG emissions. Each strategy is comprised of several action items. It is anticipated that each of these action items will turn into a multiple-year program that will require its own budget and staff resources to develop and implement. The CAP offers direction in the form of reference material and a recommended implementation strategy, but does not attempt to specifically design programs or policies.

Of the nine strategies presented in the CAP, two strategies focus on reducing emissions from transportation and three strategies address emissions reductions from building energy use. One strategy focuses on reducing waste-related emissions, and one on maximizing carbon sequestration within the City. A future version of the CAP will contain a strategy on climate change adaptation, which will include actions necessary to address rising sea level. At the time of this writing, the Hayward Area Shoreline Planning Agency had not yet released its sea level rise study. The remaining strategy focuses on community outreach and education.

## Summary of Baseline GHG Inventory



**Figure 1: City-wide GHG emissions in 2005**  
Source: ICLEI

The baseline inventory provides an estimated appraisal of emissions for a given year. The inventory indicates the sources of Hayward's emissions, and establishes a solid basis for comparisons between the City's current emissions and future emissions levels. Planners use the baseline inventory to set reasonable reduction targets and to prioritize actions to reduce emissions. To verify that emissions reductions have been achieved, planners can compare future inventories to the baseline inventory.

Findings from the baseline inventory, which was conducted for emissions in 2005, are summarized in the following pages. The community-wide inventory includes emissions from activities taking place within City limits, and the municipal inventory only includes emissions associated with Hayward's government operations.

## Community Emissions Inventory Results

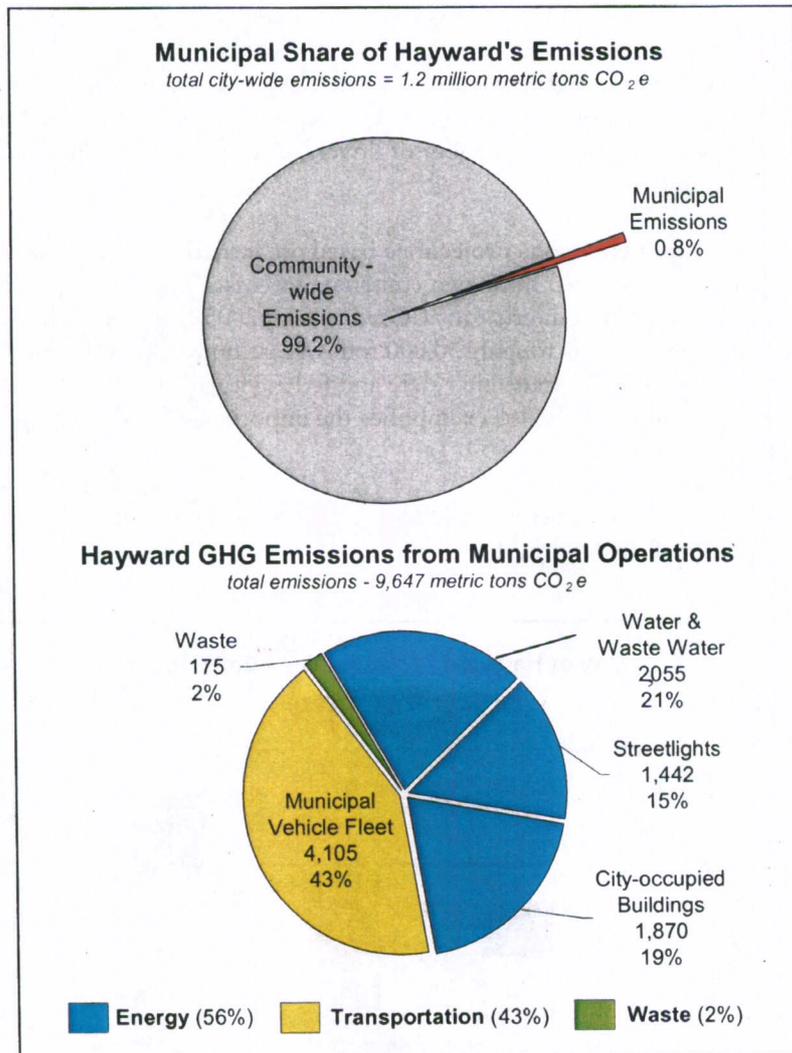
Figure 1 illustrates that in the base year 2005, the City of Hayward emitted 1,183,274 metric tons of equivalent carbon dioxide (CO<sub>2</sub>e).<sup>3</sup> The transportation sector is the single largest source of emissions, contributing 62 percent of total emissions. Energy in the form of natural gas and electricity accounted for 33.5 percent of Hayward's emissions. The landfilled portion of the City's solid waste accounted for 4.4 percent of Hayward's 2005 emissions.

## Municipal Emissions

In the base year of 2005, municipal emissions constituted 0.8 percent of Hayward's total emissions, or 9,647 metric tons of CO<sub>2</sub>e (see Figure 2). For comparison, local government emissions typically fall between one and five percent of overall community emissions. As a minor contributor to total City-wide emissions, actions to reduce municipal energy use will have a limited impact on Hayward's overall community emissions levels. However, municipal action can help reduce City government's operating costs and has important symbolic value demonstrating leadership that extends far beyond the magnitude of emissions actually reduced.

---

<sup>3</sup> Carbon dioxide is not the only gas that contributes to the greenhouse effect. Each greenhouse gas causes a discrete amount of heating. For example, one ton of methane (CH<sub>4</sub>) causes the same amount of warming as 23 tons of CO<sub>2</sub> (1 ton of CH<sub>4</sub> = 23 tons CO<sub>2</sub>e). To simplify reporting, it is standard practice to report the carbon equivalent emissions (CO<sub>2</sub>e) as opposed to the actual emissions of each gas.



**Figure 2: Municipal GHG emissions in 2005**  
 Source: ICLEI

## Projected Emissions

The emission forecast includes predictions of how GHG emissions may change in the City of Hayward over time if no emissions reductions programs are implemented. The forecast projects the growth in GHG emissions that will occur in future years. The emissions growth is based on estimated population growth and on changes in the employment mix. The City has used the emissions forecast to estimate the required emissions reductions to meet emissions targets.

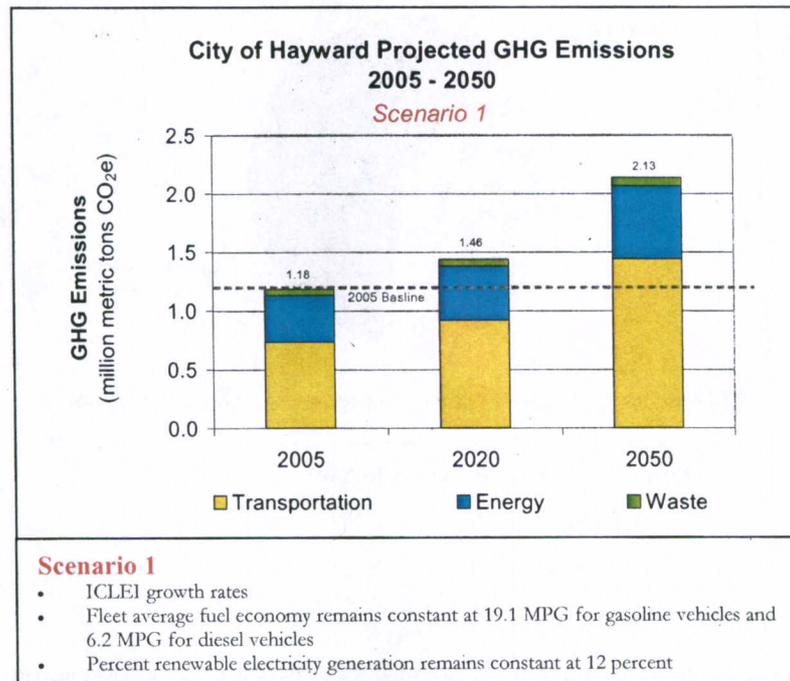
Two emissions forecast scenarios are presented. The Scenario 1 forecast uses ICLEI's methodology which assumes that the number of drivers, electricity and natural gas use, and solid waste generation will increase over time in proportion to population, number and type of jobs, and housing availability. ICLEI's methodology assumes that fuel economy and the percent of electricity generated from renewable sources remains constant throughout the forecast period. At the time ICLEI developed their

estimate, it was reasonable to assume that both vehicle fuel economy and the percentage of renewable generation in PG&E's electric generation mix would remain constant, but recent legislative activity has created a scenario where emissions will likely be reduced as so cited with these two factors.

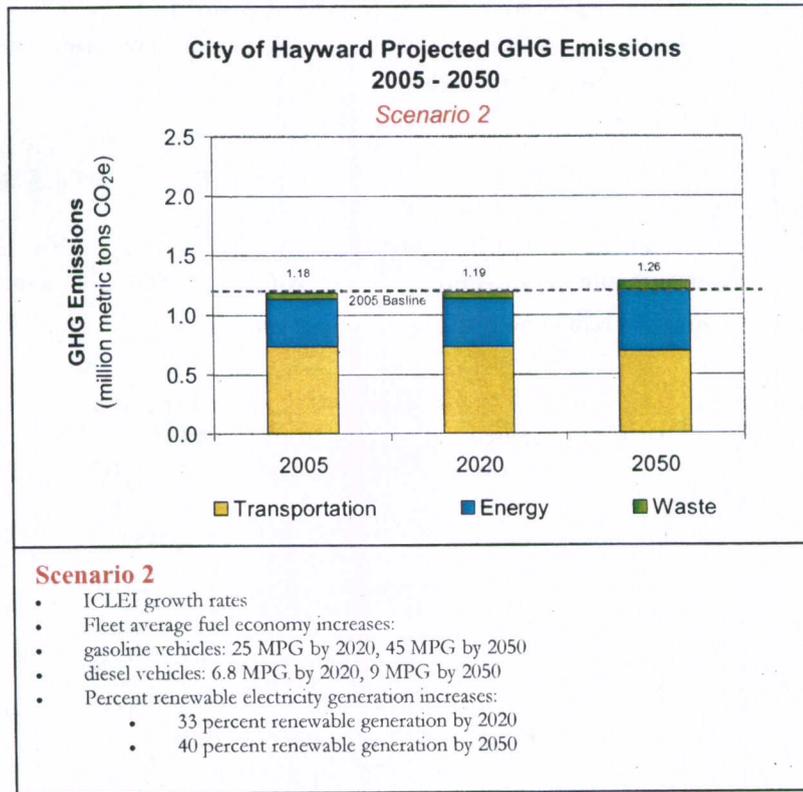
The Scenario 2 forecast takes recent legislation into consideration and assumes that both vehicle fuel economy and utility renewable electricity generation will increase over time. Scenario 2 maintains the Scenario 1 assumptions about an increased number of drivers, electricity, and natural gas use, as well as an increase in waste generation.

Figures 3 and 4 show Hayward's emissions projections based on Scenario 1 and Scenario 2 assumptions. There is a significant difference between these two emissions forecasts. Scenario 1 predicts that emissions will increase by 0.28 million metric tons CO<sub>2</sub>e between 2005 and 2020, whereas Scenario 2 predicts emissions will only increase by roughly 30,000 tons in that time. The difference in Scenario 1 and Scenario 2 emissions forecasts illustrates that state and federal legislation is expected to have a measurable impact on local emissions. It also exemplifies the importance of advocating for even more aggressive state and federal policies.

Because Scenario 2 is more plausible given the recent changes to state and federal policy, the Scenario 2 forecast is used as a basis for all analyses in the CAP.



**Figure 3: Scenario 1 projected City-wide GHG emissions 2005, 2020, and 2050**  
Source: ICLEI, City Analysis



**Figure 4: Scenario 2 projected City-wide GHG emissions 2005, 2020, and 2050**  
Source: ICLEI, City Analysis

## Hayward's Emissions Reduction Targets

Hayward's emissions reduction target represents a percentage by which the community aims to decrease emissions below the 2005 baseline, by the target years of 2020 and 2050. The City aims to reduce emissions by the following amounts:

- 6 percent below 2005 levels by 2013 (interim target)
- 12.5 percent below 2005 levels by 2020
- 82.5 percent below 2005 levels by 2050

The difference between Hayward's 2020 projected emissions and its 2020 emissions goal is about 154,642 metric tons CO<sub>2</sub>e. This means that if Hayward meets the 2020 target, the City will have prevented 154,642 metric tons CO<sub>2</sub>e from being emitted into the atmosphere. This is equivalent to:

- The CO<sub>2</sub> emissions from 28,323 cars driving for one year.
- The CO<sub>2</sub> emissions from electricity use of 20,482 homes for a year.
- The CO<sub>2</sub> emissions from burning 808 railcars worth of coal.
- The carbon sequestered annually from 35,146 acres of pine or fir forest.<sup>4</sup>

<sup>4</sup> Equivalencies calculated with EPA's Greenhouse Gas Equivalencies Calculator ([www.epa.gov/cleanenergy/energy-resources/calculator.html](http://www.epa.gov/cleanenergy/energy-resources/calculator.html)).

The interim GHG reductions target in 2013 was established to enable Hayward to set a short-term goal for the first five years of the program. This short-term goal will enable Hayward to benchmark its progress towards meeting the more aggressive longer-term goals.

Hayward based its GHG reductions goals on the goals established in the state's Global Warming Solutions Act (AB 32).<sup>5</sup> Hayward adopted state emissions reductions goals for the following reasons:

- AB 32 goals are backed by detailed analyses which consider, among other things, costs and benefits, technical feasibility, and impact on the economy and environment.
- AB 32 sets aggressive reduction goals, which align with Hayward's commitment to combat climate change.
- By adopting the state's emissions reduction goals, Hayward can help make AB 32 a stronger initiative. AB 32 has already gained the support from several cities, and as more cities adopt their goals, it becomes easier for other cities to join the initiative. By showing support for AB 32, Hayward is sending a strong message to other cities that the initiative is worth supporting.

## Reducing Emissions

### Approach for Reducing Transportation, Energy, and Solid-Waste-Related Emissions

Section 4 of the CAP describes the general approach taken in each major sector contributing to Hayward's footprint – transportation, energy use in buildings, and solid waste management. These are summarized below:

#### Approach for Reducing Transportation Related Emissions

1. **Reduce Vehicle Miles Traveled**  
*When you don't have to drive, don't drive.*
2. **Improve Fuel Efficiency of Vehicles**

*If you have to drive, drive in a vehicle that does not emit a lot of greenhouse gases.*

<sup>5</sup> AB 32 set the state-wide goal of reducing GHG emissions to: (1) 2000 levels by 2010; (2) to 1990 levels by 2020, which is equivalent to 12 percent below 2005 levels by 2020; and (3) to 80 percent below 1990 levels by 2050, which is equivalent to 83 percent below 2005 levels by 2050.

### **Approach for Reducing Energy-Related Emissions**

- 1. Conserve Energy**  
*When you don't need the energy, don't use it.*
- 2. Increase Energy Efficiency**  
*When you do need energy - use it efficiently.*
- 3. Use On-site Renewable Energy**  
*Use energy generated from low-emissions or no-emissions sources like solar, wind, or geothermal, that are attached to the building (on-site).*
- 4. Use Off-site Renewable Energy**  
*When you can't produce needed energy on-site, produce low- or no-emissions energy elsewhere (off-site).*

### **Approach for Reducing Waste-Related Emissions**

- 1. Reduce Waste**  
*Avoid creating waste when possible.*
- 2. Reuse and Recycle what you can**  
*If you have to create waste, use things that can be reused or recycled – and be sure you can actually reuse or recycle.*
- 3. Decrease amount of organics going to landfill**  
*If you have to create organic waste, avoid sending organics to the landfill where organics decompose into methane: a potent global warming gas.*

## **Emissions Reductions Strategies**

In Section 5, the CAP presents the nine strategies for reducing emissions in Hayward. Each strategy contains several actions that Hayward can deploy to reduce GHG emissions.

### **Strategy 1 – Transportation and Land Use: Reduce Vehicle Miles Traveled**

The goal of Strategy 1 is to reduce vehicle miles traveled (VMT) by encouraging residents to use alternative modes of transit, by improving the effectiveness of the transportation circulation system, and through land-use and zoning mechanisms. In the context of this report, alternative mode of transit means any mode that is not driving alone. This could include walking, biking, carpooling, or riding public transit.

### **Strategy 2 – Transportation: Decrease the Carbon-Intensity of Vehicles**

The goal of Strategy 2 is to decrease GHG emissions from motor vehicles by reducing the carbon-intensity, or emissions per mile traveled, of vehicles driven on Hayward's roads. The Strategy targets all vehicles traveling in Hayward, including private, commercial, and City-owned vehicles.

### **Strategy 3 – Energy: Improve Energy Performance of Existing Buildings**

The goal of Strategy 3 is to reduce GHG emissions associated with energy consumed in existing buildings through education programs, regulations, and incentives that aim to reduce electricity and natural gas use.

#### **Strategy 4 – Energy: Improve Energy Performance of New Buildings**

The goal of Strategy 4 is to minimize GHG emissions associated with energy consumed in new buildings by setting minimum energy and environmental performance standards for all newly constructed buildings.

#### **Strategy 5 – Energy: Use Renewable Energy**

The goal of Strategy 5 is to reduce GHG emissions associated with electricity use by increasing the amount of electricity supplied by renewable sources.

#### **Strategy 6 – Solid Waste: Increase Waste Reduction and Recycling**

The goal of Strategy 6 is to reduce GHG emissions associated with the disposal of solid waste. This will be achieved by continuing to implement waste reduction and recycling programs.

#### **Strategy 7 – Sequester Carbon**

The goal of Strategy 7 is to encourage activities, such as planting trees, which will maximize the amount of carbon sequestration taking place in the City.

#### **Strategy 8 – Climate Change Adaptation**

This Strategy will eventually address ways for Hayward to adapt to the rising sea level. The three member agencies of the Hayward Area Shoreline Planning Agency (City of Hayward, Hayward Area Recreation and Park District, and the East Bay Regional Park District) have contracted with a consultant to prepare a Sea Level Rise Study. The study will evaluate the potential impacts of sea level rise on the Hayward shoreline and the feasibility of making improvements to prevent or mitigate potential flooding. At the time of this writing, the study was not yet available. Staff expects to include a summary of the study in a future version of the CAP.

#### **Strategy 9 – Engage and Educate Community**

Hayward's residents and businesses will have to play an active role in reducing emissions. Strategy 9 focuses on specific actions Hayward plans on using to engage residents and businesses in the necessary and vital effort to reduce community-wide emissions.

## Community-wide Actions - in order of priority

**Table 1: Proposed actions for reducing community-wide emissions: listed in order of priority**

| Action Number   | Short Description  | Estimated Annual Emissions Reductions<br>(metric tons CO <sub>2</sub> e) |         | Priority |
|---|--|--|---------|----------|
|   |  | 2020   | 2050    |          |
| <b>Community-wide Actions - potential emissions reductions calculated and City has direct control over implementation</b>               |  |  |         |          |
| Action 3.9  | offer energy efficiency financing program for commercial buildings   | 1,630  | 132,025 | 1        |
| Action 3.3  | develop and implement Commercial Energy Conservation Ordinance   | 5,164  | 105,152 | 2        |
| Action 3.7  | energy efficiency financing program for single-family homes  | 181  | 40,248  | 3        |
| Action 3.8  | offer energy efficiency financing program for multiple-family homes  | 126  | 33,617  | 4        |
| Action 5.2  | offer renewable energy financing program for commercial buildings  | 10,768   | 22,822  | 5        |
| Action 6.3  | improve construction and demolition debris program   | 1,953  | 15,634  | 6        |
| Action 4.2  | continue to implement private development green building ordinance for commercial buildings                    | 4,493  | 77,925  | 7        |
| Action 5.3  | add solar requirement into private development green building ordinance  | 2,980  | 24,660  | 8        |
| Action 4.1  | continue to implement private development green building ordinance for residential buildings                   | 979  | 18,836  | 9        |
| Action 1.8  | prioritize traffic-flow management practices to reduce idling time   | 23,061   | 21,875  | 10       |
| Action 3.1  | develop and implement Residential Energy Conservation Ordinance for single-family homes                        | 639  | 39,304  | 11       |
| Action 3.2  | develop and implement Residential Energy Conservation Ordinance for multiple-family homes                      | 983  | 33,033  | 12       |
| Action 6.2  | increase participation in food-scraps collection programs  | 1,495  | 11,963  | 13       |
| Action 6.1  | increase participation in recycling programs   | 15,916   | 38,216  | 14       |
| Action 5.1  | offer renewable energy financing program for residential buildings   | 850  | 2,149   | 15       |
| Action 1.4  | expand public transit services to encourage reductions in vehicle travel                                       | 3,062  | 15,199  | 16       |
| Action 5.4  | increase portion of electricity provided by renewable energy   |  | 30,779  | 17       |
| Action 1.2  | assist businesses in establishing car share / bike-share programs  | 416  | 7,283   | 18       |
| Action 6.6  | encourage waste reduction and promote recycling participation at multi-family properties                       | 253  | 304     | 19       |
| Action 7.1  | maximize carbon sequestration within City  |  | 284     | 20       |
| Action 1.1  | assist businesses in providing commuter benefits programs  | 2,286  | 8,106   | 21       |
| Action 1.5  | continue to implement bike master-plan   | 2,419  | 7,610   | 22       |
| Action 1.3  | update parking policies to encourage reduction in vehicle travel   |  | 9,471   | 23       |
| Action 1.6  | develop and implement pedestrian master-plan   | 1,394  | 7,121   | 24       |
| Action 6.4  | ban certain materials from landfills   | 2,487  | 2,986   | 25       |
| <b>Community-wide Actions - potential emissions reductions not calculated, or City does not have direct control over implementation</b> |  |  |         |          |
| Action 3.4  | actively participate in low-income weatherization programs   | emissions reductions not quantified                                      |         | 1        |
| Action 2.2  | collaborate the state and federal government on policies that promote low-carbon vehicles and low-carbon fuels | 129,060  | 532,735 | 2        |
| Action 2.1  | provide incentives for low-carbon vehicles and low-carbon fuels  | 129,060  | 532,735 | 3        |
| Action 1.10   | align zoning policies to minimize vehicle travel   | emissions reductions not quantified                                      |         | 4        |
| Action 3.5  | promote a voluntary commitment for businesses and residents to reduce energy consumption                       | emissions reductions not quantified                                      |         | 5        |
| Action 6.7  | prefer waste management strategies that maximize the useful value of waste streams                             | emissions reductions not quantified                                      |         | 6        |
| Action 6.5  | require residents / businesses to participate in recycling programs  | emissions reductions not quantified                                      |         | 7        |
| Action 1.11   | increase availability of affordable housing for people employed in Hayward                                     | emissions reductions not quantified                                      |         | 8        |
| Action 9.1  | create green-portal website  | emissions reductions not quantified                                      |         | 9        |
| Action 9.2  | develop and implement plan to engage residents in emissions reductions activities                              | emissions reductions not quantified                                      |         | 10       |
| Action 9.3  | develop and implement plan to engage businesses in emissions reductions activities                             | emissions reductions not quantified                                      |         | 11       |
| Action 3.6  | promote use of home energy monitors  | emissions reductions not quantified                                      |         | 12       |
| Action 1.7  | update the Circulation Element of the General Plan to evaluate expansions of appropriate modes of transit      | emissions reductions not quantified                                      |         | 13       |
| Action 1.9  | encourage high density, mixed-use, smart-growth development in areas near public transit stations              | emissions reductions not quantified                                      |         | 14       |
| Action 1.12   | incentivize filling local jobs with local residents  | emissions reductions not quantified                                      |         | 15       |
| Action 8.1  | Place holder - no actions defined for climate change adaptation  | not evaluated  |         | --       |

Note: Emissions reductions were not estimated for several actions due to their overlapping effects with other actions and to prevent double-counting.

Municipal Actions - listed in order of priority

**Table 2: Proposed Actions for reducing municipal emissions: listed in order of priority**

| Action Number  | Short Description  | Estimated Annual Emissions Reductions (metric tons CO2e) |      | Priority |
|--|--|--|------|----------|
|  |  | 2020   | 2050 |          |
| <b>Municipal Actions - potential emissions reductions calculated and City has direct control over implementation</b>               |  |  |      |          |
| Action 3.10  | upgrade streetlights to LEDs   | 969  | 1054 | 1        |
| Action 2.3   | procure fuel-efficient and low-carbon fuel vehicles for municipal fleet                              | 54   | 108  | 2        |
| Action 3.12  | audit city buildings and identify energy savings opportunities                                       | 330  | 1542 | 3        |
| Action 3.11  | prepare and implement energy conservation plan for municipal buildings                               | 330  | 1542 | 4        |
| Action 2.4   | negotiate alternative-fuel and fuel economy requirements into new contracts and franchise agreements | 54   | 108  | 5        |
| Action 6.9   | implement food scraps collection programs in city buildings  | 73   | 163  | 6        |
| Action 5.5   | audit city buildings and identify buildings best-suited for solar                                    | 76   | 2227 | 7        |
| Action 5.6   | install renewable generation on municipal property   | 76   | 2227 | 8        |
| Action 4.3   | continue to implement municipal green building ordinance   | 47   | 328  | 9        |
| Action 7.2   | maximize carbon sequestration on municipal property  | 5  | 32   | 10       |
| Action 6.8   | implement recycling programs in city buildings   | 27   | 28   | 11       |
| <b>Municipal Actions - potential emissions reductions not calculated, or City does not have direct control over implementation</b> |  |  |      |          |
| Action 1.13  | provide commuter benefits to government employees  | emissions reductions not quantified                      |      | 1        |
| Action 1.15  | prefer facilities with convenient access to public transit   | emissions reductions not quantified                      |      | 2        |
| Action 9.4   | offer climate education programs to City employees   | emissions reductions not quantified                      |      | 3        |
| Action 4.4   | ensure new city buildings are built with photovoltaics and solar hot-water whenever possible         | emissions reductions not quantified                      |      | 4        |
| Action 9.6   | when awarding contracts, request applicants provide information about sustainability practices       | emissions reductions not quantified                      |      | 5        |
| Action 9.5   | demonstrate leadership by setting municipal reduction targets. Work to achieve these targets         | emissions reductions not quantified                      |      | 6        |
| Action 6.10  | develop environmentally friendly purchasing program  | emissions reductions not quantified                      |      | 7        |
| Action 1.14  | develop car-share and/or bike-share program for city employees                                       | emissions reductions not quantified                      |      | 8        |
| Action 8.2   | <i>Place holder - no actions defined for climate change adaptation</i>                               | emissions reductions not quantified                      |      | 9        |

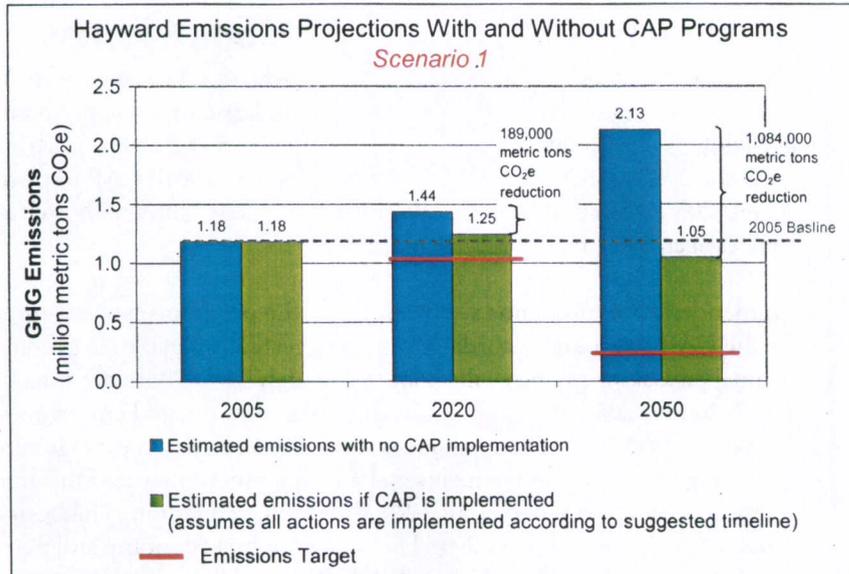
Note: Emissions reductions were not estimated for several actions due to their overlapping effects with other actions and to prevent double-counting.

## Achieving Target through Cumulative Emissions Savings

No single action will enable Hayward to meet its long-term emissions reduction targets. To meet the targets, Hayward will have to implement a wide range of actions in each of the major emissions producing sectors – transportation, energy use in buildings, and solid waste management. Figure 5 shows Hayward's emissions in 2005, the emissions projections for 2020 and 2050, and how emissions savings with CAP implementation will help Hayward meet the 2020 and 2050 emissions targets. Appendix B includes tables with each action and the estimated emissions reductions expected for the year 2020 and 2050.

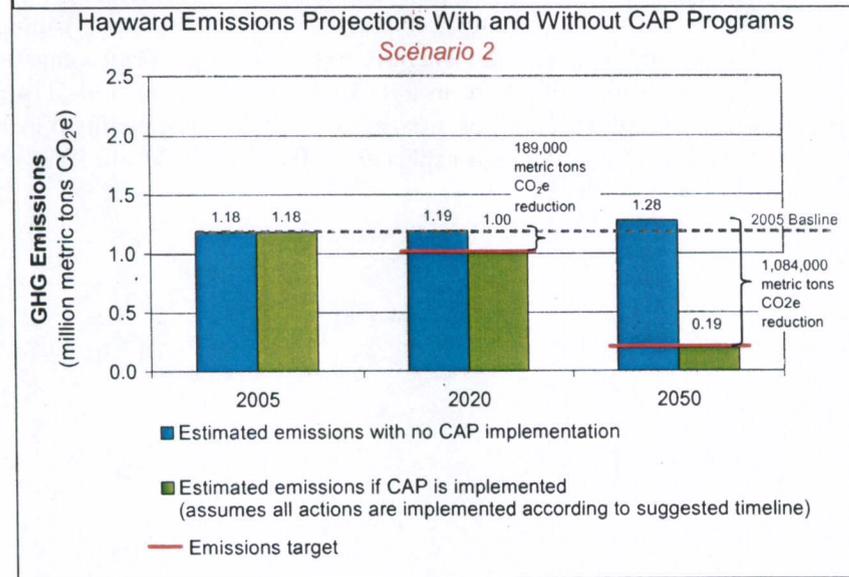
If Hayward designs the recommended CAP programs so they achieve the programs goals, as presented in Appendix C, and implements the CAP programs according to the suggested timetable, as presented in Appendix E, the estimated annual emissions savings will be approximately 189,000 metric tons CO<sub>2e</sub> and 1,084,000 metric tons CO<sub>2e</sub> in 2020 and 2050, respectively. Figure 5 shows estimated emissions with and without implementing the Climate Action Plan. The top chart shows these emissions savings subtracted from the Scenario 1 case where the average fuel economy remains at 19.1 mpg indefinitely and the amount of renewable energy generation will remain constant at about 12% renewable generation. The bottom chart shows emissions savings subtracted from the Scenario 2 BAU case where fuel economy and percent renewable generation increase over time. See Section 3 for a detailed explanation of Scenario 1 and Scenario 2 assumptions.

Although Hayward's emissions target is to reduce emissions to 12.5 percent below the 2005 level by 2020, the City will have to reduce emissions by more than just 12.5 percent. If Hayward does nothing, or continues on the business-as-usual path, GHG emissions will continue to increase in proportion to population, number of jobs, and housing availability. To meet targets, Hayward will have to prevent the expected emissions growth, reduce emissions back to 2005 levels, and then eliminate another 12.5 percent of emissions. For this reason, emissions reductions are subtracted from the projections, not the 2005 baseline. Appendix B includes a table with each action and the estimated emissions reductions expected for the years 2020 and 2050.



#### Scenario 1

- ICLEI growth rates
- Fleet average fuel economy remains constant at 19.1 MPG for gasoline vehicles and 6.2 MPG for diesel vehicles
- Percent renewable electricity generation remains constant at 12 percent



#### Scenario 2

- ICLEI growth rates
- Fleet average fuel economy increases:
  - gasoline vehicles: 25 MPG by 2020, 45 MPG by 2050
  - diesel vehicles: 6.8 MPG by 2020, 9 MPG by 2050
- Percent renewable electricity generation increases:
  - 33 percent renewable generation by 2020
  - 40 percent renewable generation by 2050

**Figure 5: Projected annual City-wide emissions with and without CAP programs**

Source: ICLEI, City Analysis

## Meeting the 2020 target

Given the estimated quantity of emissions reductions possible if Hayward achieves all program goals and implements programs according to the suggested timeline as outlined in Appendix C, the City will likely meet its 2020 target. However, to achieve the program goals, Hayward will have to be diligent. Actively contributing to regional and state-wide initiatives will help Hayward leverage other jurisdictions' efforts and allow the City to build on regional efforts to develop strategies that will be useful in other communities as well.

## Meeting the 2050 target

To achieve the 2050 target, Hayward will have to meet aggressive long-term goals including:

- Reduce VMT of passenger vehicles to 30 percent below the projected emissions level<sup>6</sup>
- Reduce VMT of diesel vehicles (heavy trucks) by 10 percent below projected emissions level
- Increase average fuel economy of passenger vehicles to 75 mpg
- Increase average fuel economy of diesel vehicles to 11.5 mpg
- Supply 100 percent of electricity from renewable sources
- Reduce electricity consumption to 65 percent below emissions projections
- Reduce natural gas consumption to 50 percent below emissions projections
- Eliminate emissions from methane produced from waste decomposition

These goals are not out of reach. The technology required to meet these goals is available today. Electric vehicles are rolling off of assembly lines, and renewable power is becoming more common. Appliances, like TVs, refrigerators, fans, toasters, stereos, hair dryers, and drills are becoming increasingly more energy efficient. Developing technology is not the biggest challenge to achieving the 2050 goal. The biggest challenge is creating the conditions for the existing technologies to penetrate the culture. Hayward faces the challenge of using its resources to help direct its residents and businesses to embrace new technologies and new ways of thinking about our collective impact on the climate. Hayward can help achieve the 2050 goals by actively participating in local, regional, state, and federal initiatives that aim to reduce emissions from the transportation, energy, and solid waste sectors.

The transportation-related goals listed above are stated in terms of reducing VMT in conventional gasoline- and diesel-powered vehicles and increasing the fuel economy of gasoline-powered passenger vehicles and diesel-powered heavy trucks. The CAP did not attempt to evaluate the climate impacts of switching to lower-carbon fuels or transitioning to electric or hybrid vehicles. However, equivalent emissions reductions can be achieved using a number of different vehicle technologies. In the coming decades, it is very likely that there will be more variety in the types of vehicles on the road. It is difficult to predict which vehicles will be most popular, but it is certain that vehicle manufacturers will explore offering electric, hybrid, plug-in hybrid, compressed natural gas vehicles, diesel and biodiesel vehicles, and (if there is a breakthrough in fuel-cell technology) hydrogen vehicles. Though the CAP did not attempt to quantify the emissions impacts of these alternative vehicles, the City should work to promote a transportation plan that will result in emissions savings, regardless of technologies deployed.

---

<sup>6</sup> If Hayward achieves its long-term VMT reduction goal and its long-term fuel economy goal, the City will reduce overall gasoline use by over 78 percent below emission projections.

Hayward should re-evaluate the CAP regularly to incorporate new technologies and new ideas that are not included in this iteration of the plan, including adaptation strategies and programs. In the future there may be more effective ways to sequester carbon, or better energy efficiency or renewable energy technologies that Hayward would benefit from adopting. Technology improvements to track include advances in battery technology (which could be applicable to both renewable energy and electric vehicles), higher efficiency and lower cost solar panels, advances in wind turbines to reduce noise, fuel-cell technologies, waste management strategies that convert waste streams to renewable and non-renewable energy, and advances in energy-efficient appliances, lighting, heating, and cooling. It is recommended that Hayward update its CAP at least once every 10 years to ensure that the City is taking advantage of the most up-to-date technologies and the most effective methods for reducing community-wide emissions. When updating the CAP, Hayward should aim to identify specific technologies and operational practices that will enable the City to meet its long-term 2050 reduction target.

### Cooperation with State and Federal agencies

The largest percentages of Hayward's GHG emissions are from vehicle use and from electricity and natural gas consumption. To be successful in meeting its emissions reduction goals, substantial reductions will be necessary from all of these sources. When looking at the estimated emissions reductions from various proposed actions, it becomes clear that a few critical actions can have a large impact on the reduction effort. For example, in the transportation sector, actions 2.1 and 2.2 - increasing the fuel economy of vehicles; and in the energy sector, action 5.3 - increasing the percentage of renewable energy used to generate electricity, are expected to result in more emissions reductions than other actions identified in the CAP.

These actions (actions 2.1, 2.2, and 5.3) are also the actions that the City has the least direct control over. Hayward does not have the authority to mandate fuel economy of vehicles sold in its jurisdiction, nor does it have the authority to increase the amount of electricity a utility produces from renewable sources. Hayward can, however, influence these federal and state-level decisions by acting in cooperation with other communities.<sup>7</sup> As vital components of Hayward's emissions reduction strategies, it is critical that Hayward do what it can to support the federal and state efforts to increase fuel economy and to increase the amount of electricity generated from renewable sources.

Perhaps the most important state or federal policy Hayward should actively advocate for is placing a price on carbon emissions. At the time of this writing, the country is beginning a debate on what federal-level carbon legislation will be most effective at reducing emissions. The discussion tends to focus on whether a cap-and-trade system or a carbon tax will be a more effective policy.<sup>8, 9</sup> Regardless of what policy makes it through the U.S. House and Senate (cap-and-trade, carbon tax, or something different), it is critical that carbon is assigned a monetary value. Further, the value of carbon needs to be set high enough so citizens and businesses make a concerted effort to reduce emissions. When the true value of carbon is realized, energy efficiency, renewable energy, alternative vehicles and alternative fuels, and advanced waste management projects will be cost competitive without state and federal incentive programs. It is recommended that the City of Hayward advocate for carbon policies that aim to help citizens and businesses realize the true value/impacts of carbon.

---

<sup>7</sup> As discussed on pages 80-87 of the CAP, Hayward does have options for pursuing programs that may result in an increase of the renewable portion of electricity used in the City that would not depend on state or federal action. Hayward does have the option of participating in a Community Choice Aggregation program and thereby securing more electricity from renewable sources (see [www.communitychoice.info](http://www.communitychoice.info) or [www.lgc.org/cca](http://www.lgc.org/cca) for information on Community Choice Aggregation) but Hayward does not have the authority to mandate the percent of electricity that PG&E produces from renewable sources.

<sup>8</sup> Yale Environmental 360. *Putting a Price on Carbon: An Emissions Cap or A Tax?* May 7, 2009. <http://e360.yale.edu/content/feature.msp?id=2148>

<sup>9</sup> Thomas Friedman. *Show us the Ball*. New York Times Opposition and Editorial. April 8, 2009. Page A25 of New York edition. [http://www.nytimes.com/2009/04/08/opinion/08friedman.html?\\_r=2](http://www.nytimes.com/2009/04/08/opinion/08friedman.html?_r=2)

## Implementing the Plan

Meeting the aggressive emissions reductions targets will require a team of key participants to come together with a unified vision and a collective motivation to achieve emissions reductions. Section 6 of the CAP discusses recommendations for implementing the Action Plan. The major recommendations are listed below.

### Recommendations for Implementing the Plan:

1. The City establish a Climate Action Management Team (CAM Team) to support and guide efforts to reduce emissions.
2. The City appoint a permanent Sustainability Coordinator who will, among other duties, coordinate the CAM Team, develop and implement programs/actions, and be responsible for monitoring and reporting on Hayward's progress toward meeting the long-term emissions reduction goals.
3. The City develop a protocol for annual reporting on progress towards meeting emissions targets. Reporting should be rigorous enough to provide an accurate analysis, but should not be so demanding that it takes away from efforts to reduce emissions.
4. The City develop a review process for evaluating the effectiveness of emissions reduction programs.
5. The CAM Team report annually to the City Council on progress towards meeting emissions reduction goals.
6. The City encourages individual businesses and business groups to participate in efforts to reduce GHG emissions by the commercial sector.
7. The City encourages residential sector developers, multi-family building owners, and residents to participate in reducing emissions by the residential sector.
8. When prioritizing actions, the City weigh the following factors: estimated emissions reductions, cost of implementation, ease of implementation, the time required for the program to reach full implementation, and financial benefits or cost savings.
9. The City create a financial plan for the climate action programs that takes into consideration the costs and staff resources needed throughout the implementation period.
10. The City evaluate alternative climate financing methods in order to provide adequate, reliable, and consistent long-term program funding.
11. The City complete a full emissions inventory every three to five years to measure and verify that emissions are actually decreasing over time.
12. The City collect information about and evaluate the effectiveness of climate programs on a regular basis.

## Ongoing Measurement and Verification

The success of the long-term carbon reduction program depends on regular monitoring. Regular monitoring is important because it:

- Enables informed decision-making about climate-related programs for setting future priorities, determining appropriate program funding and scheduling, and identifying whether there is a need to adjust the program approach to ensure that the long-term emissions targets are being achieved.
- Provides credible and defensible data to prove that the community is meeting targets and can be held accountable for its commitment to reduce emissions.
- Prepares the City for GHG reporting requirements that are likely to emerge in the future.
- Recognizes the accomplishments of the community.

### What to Measure

The CAP recommends that Hayward complete a full emissions inventory every three to five years to measure and verify that emissions are actually decreasing over time as planned. It is also recommended that Hayward collect other program-specific information on all of the individual programs that are contributing to the

emissions reduction effort, so that each program can also be regularly evaluated. The evaluations will inform City decision-making on appropriate future funding levels, help identify any need for adjustments to the program design, and enable the City to evaluate the effectiveness of the individual programs.

### Voluntary Reporting

Hayward might consider participating in programs, such as the California Climate Action Registry (CCAR) and/or EPA's Climate Leadership program. There are several reasons to consider participation in one or more of these programs. First, it will provide the City with a mechanism to obtain independent third-party verification that the City's inventories are accurate, complete, and diligent. Second, following standard protocols will ensure that the City's inventory is consistent, and therefore comparable with the inventories of other participants. Third, it will provide the City with an incentive to complete inventories on a regular basis. Finally, many of these organizations offer a variety of services to help members calculate emissions and meet reduction targets, and Hayward will have access to these services if the City becomes a member.

## Appendices

The appendices of the Plan include:

- Appendix A: Baseline Emissions Detailed Reports
- Appendix B: Estimated Emissions Reductions
- Appendix C: Methodology Report: Calculation of Estimated Emissions Reductions
- Appendix D: Action Prioritization
- Appendix E: Recommended Implementation Timing
- Appendix F: Energy Efficiency and Conservation Block Grant Information
- Appendix G: California Executive Orders and Legislation Pertaining to Climate Change
- Appendix H: Recommended Changes to the Hayward Municipal Code
- Appendix I: Recommended Changes to to the Hayward General Plan
- Appendix J: Public Comments on the Draft Climate Action Plan

*This page left intentionally blank for double sided printing.*