

# BACKGROUND AND EXISTING REGULATORY FRAMEWORK

## CLIMATE ACTION PLAN



# CHAPTER 2



# 2

## Background and Existing Regulatory Framework

*In the past decade, California’s regulatory landscape has changed dramatically with regard to climate change. The passage of Assembly Bill 32, “The Global Warming Solutions Act,” in 2006, immediately directed California’s municipalities to address climate change in their local planning efforts. This chapter provides an overview of climate change and explains the current policy and regulatory framework for this Climate Action Plan.*

### AN OVERVIEW OF CLIMATE CHANGE

Awareness of climate change and global warming has increased significantly in recent years. Although used interchangeably, there is a difference between the terms “climate change” and “global warming.” According to the National Academy of Sciences, climate change refers to any significant, measurable change of climate lasting for an extended period. It can be caused by natural factors and human activities alike. Global warming, on the other hand, is an average increase in the temperature of the atmosphere caused by increased greenhouse gas emissions from human activities. The use of the term climate change is becoming more prevalent because it encompasses all changes to the climate, not just temperature. Throughout this Plan, the term “climate change” is used.

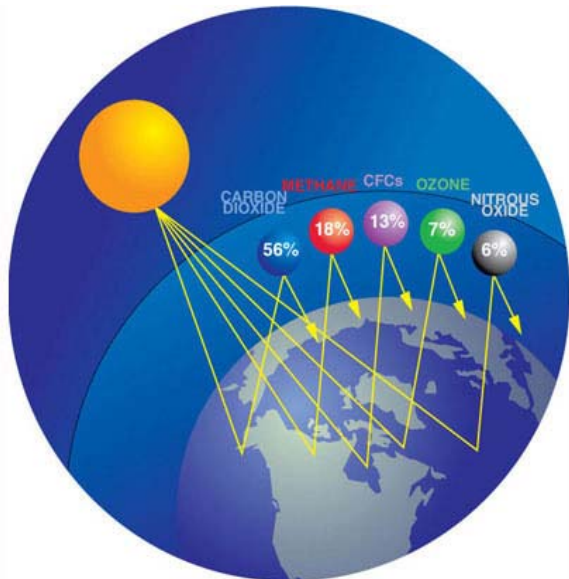
Climate change is now a widely accepted fact among scientists, with the only remaining uncertainty how climate change will affect the earth’s systems over time. Although much of the attention to the topic is global in scale, it is important to realize that climate change affects every community at the local level.

**Climate change refers to any significant, measurable change of climate lasting for an extended period.**

To fully understand climate change, it is important to recognize the naturally occurring “greenhouse effect” and to define the greenhouse gases (GHG) that contribute to this phenomenon. Our planet relies on the natural greenhouse effect. This effect results when the atmosphere captures heat that radiates away from the earth toward space. By retaining heat and warming the planet’s surface, this process makes life possible on earth. Several gases in the atmosphere function as barriers and trap heat within the planet’s atmosphere, including water vapor, carbon dioxide, methane, nitrous oxides, and chlorofluorocarbons. These gases function

similar to glass on a greenhouse; the glass panes of a greenhouse allow sunlight to pass into the building but trap heat within it, preventing heat from escaping.<sup>1</sup> (Refer to **Figure 2-1.**)

**Figure 2-1.** *The Greenhouse Effect*



Greenhouse gases are transparent to certain wavelengths of the sun’s radiant energy, allowing them to penetrate deep into the atmosphere or all the way to the earth’s surface. Clouds, ice caps, and particles in the air reflect about 30% of this radiation, but oceans and land masses absorb the rest (70% of the radiation received from the sun) before releasing it back toward space as infrared radiation. Greenhouse gases and clouds effectively prevent some of the infrared radiation from escaping; they trap the heat near the earth’s surface where it warms the lower atmosphere. If this natural barrier of atmospheric gases were not present, the heat would escape into space, and the earth’s average global temperatures could be as much as 59 degrees Fahrenheit cooler.<sup>2</sup>

While the greenhouse effect is a natural process, humans have accelerated the generation of greenhouse gas emissions

beyond natural levels. This overabundance of greenhouse gases has led to a dangerous acceleration of the warming of the earth. There is an international consensus that humans have caused the emission of dangerous levels of greenhouse gases. These greenhouse gases are impacting the planet’s climate system and posing dangerous large-scale threats to the planet and humanity at large. Climate change will impact all facets of life. Many of its effects are irreversible and are already impacting communities around the world. If current trends remain unchanged, likely effects of climate change include the following:<sup>3</sup>

- An increase in global average temperatures by as much as 7 degrees Fahrenheit by 2100.
- Average sea levels will rise; estimates range from 8 to about 20 inches under the most optimistic scenario (if immediate and drastic action is taken) a worst case scenario of 16 to 20 feet if emission trends remain unchecked.
- Wildfires will increase in frequency and severity.
- Scarce water resources will dwindle. If current trends continue, the Sierra Snow Pack, which provides 65% of California’s fresh water, will decrease by at least 25% by 2050.<sup>4</sup>
- Public health impacts will result from increased air pollution and heat.

Numerous studies have documented the human impact on emissions of greenhouse gases and warn against the severity of its consequences if no immediate action is taken.

<sup>1</sup> (NASA, 2011)

<sup>2</sup> Ibid.

<sup>3</sup> (The National Academies, 2008)

<sup>4</sup> (California Department of Water Resources, 2010)

## IMPACTS TO CALIFORNIA AND WALNUT CREEK FROM CLIMATE CHANGE

Walnut Creek is located in Contra Costa County, to the east of the San Francisco Bay. Walnut Creek is an economic center for the county and is bisected by two freeways, Interstate 680 and State Highway 24. The landscape of Walnut Creek features rolling hills of oak woodlands, chaparral, and numerous sub-watersheds draining into north-flowing Walnut Creek. The city is adjacent to significant open space resources.



Potential consequences of climate change for the State of California and the City of Walnut Creek include:

**Increased rate of wildfires:** Wildfire risk is based on a combination of factors including precipitation, winds, temperature, and vegetation, all of which are susceptible to increased warming. Wildfires are likely to grow in number and size throughout the state as a result of increased temperatures induced by climate change. Even under the “medium” warming scenario predicted by the Intergovernmental Panel on Climate Change (IPCC), wildfire risk will likely increase by 55% in California.<sup>5</sup> Areas of Walnut Creek that are adjacent to open space may be particularly susceptible to increased risk of wildfire.

### HOW ARE GREENHOUSE GASES MEASURED?

“Carbon dioxide equivalent” (CO<sub>2</sub>e) is a way to equalize the different potencies of the six internationally recognized greenhouse gases (carbon dioxide, methane, nitrous oxides, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). For example, methane (CH<sub>4</sub>) has 21 times the potency of carbon dioxide (CO<sub>2</sub>); therefore, 21 metric tons CO<sub>2</sub>e could be 21 metric tons of carbon dioxide or 1 metric ton of methane.

**Negative impacts on wildlife:** Increased global temperatures and resource depletion exacerbated by climate change are causing disruptions in animal migration and plant pollination. As temperatures rise, species are moving north in California or to higher elevations. This change in migration disrupts the food chain and prevents some plant species from being pollinated. Water and food supplies are expected to be more variable and to shift as the seasons change on different time frames. With vegetation, reduction in soil moisture will result in early dieback of many plants, potentially leading to conflicts with animal breeding seasons and other natural processes. Many of the potential effects on wildlife are still being studied, but due to inability to adapt to new climates, the potential for severe species loss is prescient.

<sup>5</sup> (California Climate Change Center, 2006)



**Deteriorating public health:** Heat waves are expected to have a major impact on public health as well as decreasing air quality and increasing mosquito breeding and mosquito-borne diseases. Vector control districts throughout the state are already evaluating how they will address the expected changes to California’s climate. The elderly and young and those vulnerable populations that do not have the resources to deal with the costs and adapt to the changes that are expected to impact the community will need assistance. Social equity issues related to the unequal distribution of resources and increased costs to address community-wide health risks will need to be addressed proactively to reduce the potential for financial strain on the City.

**A decreasing supply of fresh water:** Warmer average global temperatures cause more rainfall than snowfall, making the winter snowfall season shorter and accelerating the rate at which the snowpacks melt in the spring. With rain and snow events becoming less predictable and more variable, the rate of flooding could increase and California’s ability to store and transport fresh water for consumption could decrease.

**Increased severity and frequency of flood events:** Climate change is forecast to result in more intense rainfall events that will generate more frequent or more extensive runoff and flooding. Localized flood events may increase in periods of heavy rain. Additionally, erosion may increase and water quality may decrease as a result of increased rainfall

amounts. Walnut Creek is particularly at risk in areas surrounding the city’s many creeks.

**Rising sea levels:** Sea level rise is attributed to the increase of average ocean temperatures and the resulting thermal expansion and the melting of snow and ice contributing to the volume of water held in the oceans. While many effects of climate change will impact Walnut Creek, sea level rise is one specific impact that has been extensively studied and quantified, and its effects mapped. The San Francisco Bay Conservation and Development Commission (BCDC) issued a report on sea level rise in April 2009, which states that sea levels in the Bay Area will rise 16 inches by mid-century and 55 inches by the end of the century. By mid-century, approximately 180,000 acres of the Bay Area could be inundated, and 213,000 acres could be flooded by the end of the century, including 93% of both the Oakland and San Francisco airports.

Though the City of Walnut Creek will not be subject to inundation as a result of sea level rise, the anticipated economic impacts related to movement of goods and people in and around the Bay Area that would be disrupted by flooding of ports, airports, highways, and rail lines will be significant for Walnut Creek.<sup>6</sup>

The speed and amount of sea level rise will be determined by the increase in average temperatures and rate of melting of glacial ice. While there is a degree of uncertainty in projections, many original projections have been in reality more conservative than the actual impacts of climate change once they occurred. If current trends continue, some have predicted as much as a 10-foot sea level rise by 2025 and a 30-foot sea level rise by 2095.<sup>7</sup>

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<sup>6</sup> (San Francisco Bay Conservation and Development Commission, 2009)

<sup>7</sup> (Hansen)

**Unpredictable weather:** The years of 1995–2005 had the warmest global temperature ever recorded in instrumental history (since 1850).<sup>8</sup> Higher temperatures will cause more rainfall than snowfall, which will impact water supplies not only for Walnut Creek but for every other user of water in the state. Combined with longer summer seasons, the increased temperature will reduce soil moisture levels, which necessitate increased irrigation, increase the need for air conditioning use, increase the rate and spread of wildfires, and stress the electrical infrastructure that serves the city.



## STATE AND FEDERAL REGULATORY FRAMEWORK

The State of California’s elected officials have taken an aggressive stance on combating climate change. The State has developed a framework of legislation that provides a method for local and state governments to address climate change. The framework is described below.

### California’s Legislative Direction

California has a long history of proven leadership in addressing climate change that spans the last 20 years. In 1988, before the world had even arrived at a consensus on the causes of climate change, Assembly Bill (AB) 4420 (Sher, Chapter 1506, Statutes of 1988) designated the California Energy Commission (CEC) as the lead agency for all climate change issues in California.<sup>9</sup> Since that time, there has been a flurry of initiatives in California to address climate change. These initiatives have strengthened the ability of entities in California to engage in accurate data collection and have created ambitious targets and regulations that will directly lead to reductions in greenhouse gas (GHG) emissions. Not only have California’s initiatives earned it a role as the leader in the United States for climate planning strategies, but the state has received world attention and accolades for its tireless efforts.

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<sup>8</sup> (Rosenzweig et al., 2007)

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<sup>9</sup> (Moser, Franco, Pittiglio, Chou & Cayan, 2009)

Currently, the State of California is the 15<sup>th</sup> largest emitter in the world of all greenhouse gas emissions, ultimately accounting for 2% of all global emissions.<sup>10</sup> In June of 2005, Governor Schwarzenegger issued a landmark Executive Order establishing progressive greenhouse gas emissions targets for the entire state. Executive Order S-3-05 outlines the following goals:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020 reduce greenhouse gas emissions to 1990 levels;
- By 2050, reduce greenhouse gas emissions to 80% below 1990 levels.

To support these reduction targets, the California legislature adopted the California Global Warming Solutions Act of 2006, also known as AB 32. The law requires the California Air Resources Board (CARB) to identify baseline emissions, develop regulatory and market mechanisms that will reduce greenhouse gas emissions to 1990 levels by 2020, and continue to calculate and monitor future emissions. In December 2008, CARB approved the AB 32 Scoping Plan outlining regulatory and market mechanisms to achieve the goal of AB 32. The plan cites local government action as an integral partner to achieving the State's goals.

In 2008, California continued its efforts to reduce emissions and support AB 32 through adoption of Senate Bill (SB) 375. SB 375 is a comprehensive land use planning law that directly links transportation and land use planning to reduce greenhouse gas emissions. There are three goals to SB 375:

- Use the regional transportation planning process to help meet AB 32 emission reduction targets;

- Provide California Environmental Quality Act (CEQA) streamlining to encourage infill development adjacent to existing transportation infrastructure; and
- Coordinate regional housing needs with the regional transportation planning process to encourage sustainable development.

In addition to AB 32 and SB 375, the State has taken numerous other actions taken to reduce greenhouse gas emissions in the state. The California Climate Action Registry (CCAR) was created by the State in 2000 through SB 1771 (Sher, Chapter 1018, Statutes of 2000) as a nonprofit entity to assist entities in California working to create GHG emissions baseline inventories.<sup>11</sup> In 2001, SB 527 directed the CEC to provide specific guidance to the CCAR on issues including the development of GHG emissions protocols and the qualifications of third parties providing technical assistance and certification of inventories.<sup>11</sup> Subsequently, in 2002, AB 1493 (Pavley, Chapter 200, Statutes of 2002) directed CARB to create regulations that would lead to reductions in greenhouse gas emissions from passenger vehicles, light-duty trucks, and noncommercial vehicles sold in California.<sup>12</sup> In 2006, SB 1368 (Perata, Chapter 598, Statutes of 2006) established greenhouse gas emission performance standards for longer-term financial investments in base-load electricity generation to catalyze the transition to cleaner energy use by utility companies. Additional bills targeting climate change include SB 97 (Dutton, Chapter 185, Statutes of 2008), which required the Governor's Office of Planning and Research (OPR) to develop guidelines for the California Environmental Quality Act pertaining to the mitigation of GHG emissions or the effects of GHG emissions.<sup>13</sup> The State Natural Resources Agency adopted these guidelines in December of 2009, and the guidelines went into effect in March of 2010.

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<sup>10</sup> (California Air Resources Board; California Climate Action Registry; ICLEI - Local Governments for Sustainability, 2008)

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<sup>11</sup> (Moser, Franco, Pittiglio, Chou & Cayan, 2009)

<sup>12</sup> (California Air Resources Board; California Climate Action Registry; ICLEI - Local Governments for Sustainability, 2008)

<sup>13</sup> (Moser, Franco, Pittiglio, Chou & Cayan, 2009)

## Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) regulates stationary air pollution sources throughout the nine counties that surround San Francisco Bay, including the County of Contra Costa. In response to the State CEQA guidelines that went into effect in March 2010, BAAQMD updated its CEQA Air Quality Guidelines for the San Francisco Bay Area Basin. The purpose of the BAAQMD CEQA Air Quality Guidelines is to assist lead agencies in evaluating the air quality impacts of proposed projects and plans within the San Francisco Bay Area Basin.

BAAQMD's updated CEQA Air Quality Guidelines establish thresholds of significance for impacts related to greenhouse gas emissions for consistency with the requirements of the California Environmental Quality Act. These thresholds can be used to assess plan-level and project-level impacts and allow a lead agency to determine that a project's impact on greenhouse gas (GHG) emissions is less than significant if it is in compliance with a qualified greenhouse gas reduction strategy.

This Climate Action Plan follows both State CEQA Guidelines and BAAQMD's guidelines by incorporating the standard elements of a qualified GHG reduction strategy. The standard elements of a GHG reduction strategy include the following steps:

- Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic range.
- Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-

project basis, would collectively achieve the specified emissions level.

- Monitor the plan's progress.
- Adopt the greenhouse gas reduction strategy in a public process following environmental review.

**Appendix 4** describes in detail how the City's Climate Action Plan satisfies BAAQMD's guidelines for standard elements of a qualified GHG reduction strategy and will allow future development projects to determine that a project has a less than significant impact on GHG emissions so long as it complies with the City's Climate Action Plan. Additional information is also provided later in this chapter.

## Federal Direction

The federal government has yet to enact legislation for greenhouse gas emission reductions. However, even without mandates, new activity has been ushered in with the election of President Obama that is conducive to the reduction of GHG emissions and climate planning. Through the Energy Efficiency and Conservation Block Grant (EECBG) program, the U.S. Department of Energy (DOE) is providing a total of \$3.2 billion to cities and counties to reduce fossil fuel emissions; reduce total energy use; improve energy efficiency in the transportation, building, and other appropriate sectors; and create and retain jobs.<sup>14</sup> Using this money, jurisdictions across the United States are allocating funds to initiate climate change planning and achieve reductions in greenhouse gas emissions. The EECBG program is an initial indicator of increased federal involvement in the realm of climate planning.

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<sup>14</sup> (U.S. Department of Energy, 2010)

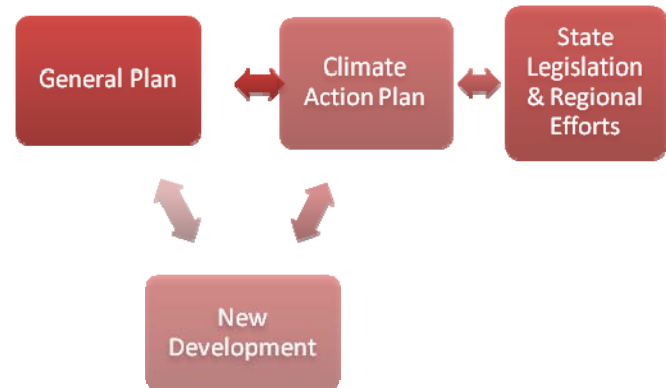
## RELATIONSHIP TO THE GENERAL PLAN

The City of Walnut Creek is taking a proactive approach to climate action and greenhouse gas emissions reduction through the development of a Climate Action Plan (CAP) that will be used to inform the City’s General Plan Update process. This CAP is also being structured to serve as a programmatic tiering document for the purpose of the California Environmental Quality Act. Through the completion of a General Plan Environmental Impact Report (GPEIR) addendum, the link between this CAP and the General Plan is further established. This CAP is intended to be an adaptively managed document with the flexibility to change and be modified as the science and regulatory framework around climate change is further refined in coming years. It is recommended that the CAP be reviewed every five years to ensure the most appropriate information and emission reduction measures are included in the Plan.

This CAP encompasses the current and future efforts to reduce greenhouse gas emissions and reduce the effects of global climate change within the city. By incorporating the goals and measures of this CAP into the General Plan through a GPEIR addendum, Walnut Creek is ensuring that future development and planning activities in the city conform to the objectives of the CAP and state climate change legislation.

This CAP will be an integral part of planning and development in Walnut Creek in the coming years. As illustrated in **Figure 2-2**, the CAP serves as an analytical link for the City between local development, state requirements, and regional efforts. It will also be a way for the City to determine consistency with state legislation, such as AB 32 and SB 97, which mandate that local governments address greenhouse gas emissions in local planning and environmental documents.

**Figure 2-2.** Context of the CAP in Relation to Other Planning Documents and Legislation



## NEXT STEPS

The City of Walnut Creek’s Climate Action Plan will serve as a guide to the actions City officials, project developers, and the community at large can take to reduce Walnut Creek’s GHG emissions and work toward a more sustainable community. This strategy is a living document that will be updated on a regular basis to incorporate new programs and emissions reduction strategies as they are developed and as technological advancements are made.

This Climate Action Plan recommends monitoring and updating the emissions inventory and reduction measures a minimum of every 3 to 5 years. The City will also complete an annual reporting process to track progress towards Climate Action Plan targets. If the City determines during annual review that the City is falling short of reduction targets, the City will create additional voluntary and mandatory measures to attain the City’s overall reduction goals. Each department assigned with implementation responsibilities will support this ongoing process. BAAQMD guidelines recommend that the City clearly specify the measures within the Climate Action Plan that new construction projects must implement to demonstrate compliance with the City’s Climate Action Plan and determine that the project’s operational GHG emissions are less than significant by complying with a qualified GHG emissions reduction strategy. To ensure that each new construction project complies with the City’s Climate Action Plan, the City will develop a checklist to be submitted by the project applicant in addition to the already required forms.