

## PLANNING COMMISSION DRAFT

# CITY OF VICTORVILLE CLIMATE ACTION PLAN



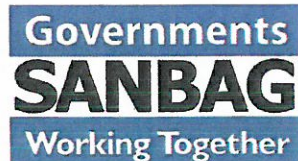
### PREPARED FOR:

City of Victorville  
14343 Civic Drive  
Victorville, CA 92307  
Contact: Michael Szarzynski, Senior Planner

### PREPARED BY:

City of Victorville, Development Department  
San Bernardino Association of Governments (SANBAG)  
ICF International  
Atkins North America

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## Victorville Climate Action Plan

### Summary and Talking Points

- Assembly Bill AB32 was adopted which required a cap on greenhouse gas (GHG) emissions by 2020 to 1990 levels. This equates to 15% below 2008 levels or Victorville's equivalent of 29% below 2020 levels at Business-as-Usual (BAU) growth and development.
- In 2008 the City Council authorized Victorville Staff, including the City's share of funds, to partner with SANBAG to conduct a countywide GHG inventory. This CAP is a culmination of those efforts.
- SANBAG conducted a regional Programmatic Environmental Impact Report (PEIR) for the GHG Inventory. Because this CAP does not create any new impacts and is consistent with the EIR, the City can tier off the PEIR without further environmental review per CEQA Section 15168(c)(2).
- The CAP is a document which will specifically demonstrate how the City will reduce GHGs in compliance with AB32. The CAP involves both existing and new construction within the City and across all industries including residential, commercial, industrial, municipal (public) and institutional.
- The CAP allows for the streamlining of projects by allowing developers to demonstrate that their projects are consistent with the CAP. By demonstrating this through a screening table process prior to project submittal, developers will not have to conduct a complete GHG analysis on their own to comply with CEQA, saving time and money.
- The CAP is not additional regulation created by Victorville. The regulation to reduce GHGs already exists in CEQA, including Section 15126.4(c) and CA Law. By adopting the CAP, the City Council will assist in streamlining project approval.
- The City of Victorville General Plan requires the City to adopt a CAP. Additionally, by adopting a CAP, the City reduces the possibility of an individual project being sued due to environmental concerns through CEQA.
- The local reduction measures required for the City to meet its 2020 goal are less than one quarter (24%) of the required reduction measures from the State, County and City combined. In other terms, the State and Regional requirements are much greater than the local requirements to achieve the City's goal.
- The City has included flexibility within this CAP for developers to choose some of their own reduction measures (see Performance Standard 1 PS-1). This flexibility has been found favorable within the development community (i.e. BIA).



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# Acronyms and Abbreviations

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20X2020 goal	20% reduction in urban per capita use by December 31, 2020 (referred to as the
AB	Assembly Bill
ATVs	all-terrain vehicles
AVL	automatic vehicle location
BAPIS	Bus Arrival Prediction Information System
BAU	Business-as-Usual
BBARWA	Big Bear Area Regional Wastewater Agency
BRT	Bus Rapid Transit
BVES	Bear Valley Electric Service
CAA	Clean Air Act
CAFE	Corporate Average Fuel-Economy
Cal-EPA	California Environmental Protection Agency
CAP	climate action plan
CARB	California Air Resources Board
CCAs	Community Choice Aggregations
CCR	California Code of Regulations
CEC	California Energy Commission
CEEP	Community Energy Efficiency Program
CEQA	California Environmental Quality Act
CFL	compact fluorescent
CH <sub>4</sub>	methane
CIC	CAP Implementation Coordinator
CIT	CAP Implementation Team
CIM	California Institution for Men
CLEO	Custom Language Efficiency Outreach
CO <sub>2</sub>	carbon dioxide
CPUC	California Public Utilities Commission
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESPs	energy service providers
°F	degrees Fahrenheit
FED	Functional Equivalent Document
FY	fiscal year

GHG	greenhouse gas
GPS	global positioning system
GTFS	General Transit Feed Specification
GWh	gigawatt-hours
GWP	global warming potential
HERS	Home Energy Rating System
HFCs	hydrofleurocarbons
HQTA	High Quality Transit Areas
HVAC	heating/venting and air conditioning
I	Interstate
IEUA	Inland Empire Utilities Agency
IOU	investor-owned utilities
IPCC	Intergovernmental Panel on Climate Change
ITS	Intelligent Transportation Systems
IVR	Interactive Voice Response
kW	kilowatts
LCFS	Low Carbon Fuel Standard
LED	light emitting diode
LFGTE	landfill-gas-to-energy
L RTP	Long Range Transit Plan
MCAP	municipal inventory and reduction plan
MEU	Mobile Energy Unit
MMTCO <sub>2</sub> e	million MTCO <sub>2</sub> e
MPOs	metropolitan planning organizations
MTCO <sub>2</sub> e	metric tons of carbon dioxide equivalent
MW	megawatt
N <sub>2</sub> O	nitrous oxide
NPV	Net Present Values
ODS	ozone-depleting substances
PACE	Property Assessed Clean Energy
Partnership	San Bernardino Associated Governments and Participating San Bernardino County Cities Partnership
PFCs	perfluorinated carbons

Plan	San Bernardino County Regional Greenhouse Gas Reduction Plan
PPAs	Power Purchase Agreements
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PS	GHG Performance Standard for New Development
QR	Quick Response
Reporting Rule	Greenhouse Gas Reporting Rule
RHNA	Regional Housing Needs Allocation
RPS	Renewable Portfolio Standard
RTPs	Regional Transportation Plans
SANBAG	San Bernardino Associated Governments
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGC	Southern California Gas Corporation
SCS	sustainable communities strategy
SF <sub>6</sub>	sulfur hexafluoride
SMP	Sustainable Master Plan
TDM	Transportation Demand Management
TRP	trip reduction plan
TSM	Transportation Systems Management Plan
UC	University of California
UPRR	Union Pacific Railroad
VERA	Voluntary Emission Reduction Agreement
VMT	vehicle miles traveled
VVWA	Victor Valley Wastewater Agency
WWTPs	wastewater treatment plants

# Chapter 1

## Introduction

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### 1.1 What Is This Document?

This Climate Action Plan (CAP) for the City of Victorville presents the greenhouse gas (GHG) inventories, identifies the effectiveness of California initiatives to reduce GHG emissions, and identifies local measures that were selected by the City to reduce GHG emissions under the City's jurisdictional control to achieve the City's identified GHG reduction target. The City of Victorville participated in the San Bernardino County Regional Greenhouse Gas Reduction Plan (Plan) which presents the collective results of all local efforts to reduce GHG emissions consistent with statewide GHG targets expressed in Assembly Bill (AB) 32, the "Global Warming Solutions Act of 2006" and Senate Bill (SB) 375. Victorville used the technical information within the Plan in the development of the CAP.

This CAP builds on the regional work and refines it to provide City-specific information and to develop the local implementation plan for City-selected GHG reduction measures. This CAP identifies how the GHG reduction measures will be implemented and monitored by the City going forward to ensure that progress is being made toward the GHG reduction target.

### 1.2 Benefits of a Regional GHG Reduction Plan

Participating cities in the SANBAG effort, including the City of Victorville, chose to prepare GHG inventories and evaluate local GHG reduction measures in concert. SANBAG, the City of Victorville and the other Partnership cities see several advantages to this approach.

**Economies of Scale:** Although many aspects of GHG planning and policy making are unique to each city, certain steps are standard and are conducted in exactly the same way by all cities. These steps include: GHG inventory data collection; GHG inventory calculations; forecast of 2020 GHG emissions; review of standard GHG reduction measures; quantification of the benefit of state level GHG reduction measures; and preparation of basic regulatory language and text common to GHG reduction plan documents in California. Completing these standard steps together saves both money and time for all Partnership cities.

**Assurance of Standard Methods, Data, and Baseline Year:** Even though GHG inventory protocols are standard and communities generally follow the recommended protocols, some subtle differences exist that can limit comparability between cities. Of particular importance to a comparison are the selection of baseline year, the type of data that was collected, methodologies, and boundaries. With a regional inventory and reduction plan, Partnership cities can be assured of an "apples to apples" comparison across all sectors for city-to-city comparisons as well as city-to-region comparisons.

**Regional Communication and Education:** Similar to most communities in California and across the U.S., San Bernardino cities are undertaking a GHG inventory and reduction plan for the first time. As city staff, stakeholders, and residents go through this process, each learns lessons that can be shared with other communities. The ability to share information benefits all Partnership cities.

**Regional View:** Certain sectors of GHG emissions are the result of activity that occurs only within the boundary of a city, for example residential natural gas use. Other emissions, such as on-road transportation, are the result of activity that occurs across jurisdictional boundaries and both jurisdictions are responsible for the emission. For certain sectors, looking only at the GHG emissions of a single city is of limited utility and GHG reduction planning cannot be undertaken alone. This Plan supports both city-specific and regional planning.

**Programmatic EIR to Simplify CEQA Compliance:** The State California Environmental Quality Act (CEQA) Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. CEQA Guidelines (Section 15183.5) also allow individual projects to tier off of a larger (and certified) GHG reduction plan. Thus, individual projects do not need to each conduct a GHG analysis as part of CEQA if they can demonstrate consistency with the larger plan. By completing a common basic plan and a subsequent programmatic EIR, all projects in the region can tier off the EIR and be considered less than significant under CEQA if they show consistency with the regional plan. The Program EIR was completed and certified by SANBAG in March 2014.

## 1.3 SANBAG's Role

The *San Bernardino County Regional Greenhouse Gas Reduction Plan* has been sponsored and facilitated by SANBAG, the regional transportation planning agency in San Bernardino County. SANBAG is leveraging its role as a transportation planning agency and the regional scope of its authority to reduce GHG emissions in several emissions sectors in the region. As a regional agency, SANBAG is in a unique position to support coordinated city efforts and facilitate regional dialogue and cooperation on GHG issues. As the transportation agency, SANBAG also has a critical role in reducing the region's GHG emissions. On-road transportation contributes 35% of the region's GHG emissions. SANBAG worked closely with Southern California Association of Governments (SCAG) in the development and adoption of SCAG's *2012–2035 Regional Transportation Strategy and Sustainable Communities Strategy*, the benefits of which are captured for the region in this analysis. SANBAG is also spearheading efforts to expand Metrolink and is leading other regional efforts related to energy efficiency and renewable energy. SANBAG is planning to implement a regional energy efficiency and water conservation improvement loan program (AB 181 and AB 474 - PACE) for retrofits to existing buildings and is participating in a regional joint solar power purchase agreement.

## 1.4 How Has the City Used the Regional Plan in Victorville's CAP?

The San Bernardino County Regional GHG Reduction Plan has been used for several purposes for the City of Victorville in the development of this CAP.

**Reference Document:** The Regional Plan established a baseline GHG inventory for the City and the region as a whole. This baseline is referenced for all future GHG analyses and planning. This document contains basic terms and concepts and regulatory information that is useful for future planning (city-specific or regional) or in communicating to a larger audience.

**Climate Action Plan Template:** The Regional Plan provided the technical information to support the City's selection of appropriate targets and GHG emissions reduction measures that could be included in the City's CAP. The Regional Plan was provided in an electronic format that allowed more rapid preparation of the CAP. The City has develop its own schedule, funding, and implementation plan consistent with the City's existing infrastructure and procedures and in tune with the City's unique priorities and needs.

**Outline for a Local Climate Action Plan:** The CEQA guidelines adopted pursuant to SB 97 specify that a GHG reduction plan must include the following elements in order to allow for tiering under CEQA. Elements that have already been developed as part of the Regional Plan are identified and areas where local refinement was provided by the City are also noted.

- An inventory of GHG emissions (included in the Regional Plan).
- A forecast of future GHG emissions (included in the Regional Plan).
- An identified GHG reduction goal (included in the Regional Plan).
- Measures to reduce GHG emissions under the control of the jurisdiction (included in the Regional Plan).
- Implementation actions to ensure that the measures result in actual reductions (included in the Regional at a general level and then refined by the City to be specific to the City's procedures).
- Monitoring of the plan's success over time (included in the Regional Plan and then requires local refinement).
- Adaptation and revision of the plan over time as needed to meet the adopted goal (included as part of the implementation plan for this CAP).

The Regional Plan provided many of the required components of a GHG reduction plan, as listed above. Since the Regional Plan contained only basic implementation steps that would apply to all cities, the primary effort by the City of Victorville was to identify the specific schedule, funding, and implementation actions which are critical to the success of the GHG reduction effort.

## 1.5 Next Steps

SANBAG's adoption of the San Bernardino County Regional GHG Reduction Plan and certification of the Programmatic EIR for the Plan occurred in March 2014. The City of Victorville drafted this CAP based upon the information within the Plan and tiers from the Programmatic EIR per CEQA Section 15168(c)(2) for environmental review of the CAP. The City has developed its implementation and monitoring program to carry the GGH reduction measures forward and included those within this Draft CAP.

The Draft CAP will be made available for public review by City residents and stakeholders. A Final CAP will be developed in consideration of public comments after Planning Commission review. At that point, the Final CAP would be brought to the City Council for consideration for adoption.

Once adopted, the City of Victorville will begin working together with SANBAG, the other Partnership cities and with stakeholders, residents, and businesses within the community to implement GHG reduction measures and track success of the CAP.

## 2.1 Greenhouse Gas Reduction and Climate Action Planning In California

This section describes important laws, policies and documents related to GHG emissions, including AB 32, SB 375, the Renewable Portfolio Standard, Pavley fuel economy standards (AB 1493), and the Low Carbon Fuel Standard (LCFS). This section also briefly discusses pending national legislation and the challenges associated with GHG reduction and climate action planning at the state level. Figure 2-1 displays a timeline of key state and federal regulatory activity.

### 2.1.1 Federal Regulation

Although there is currently no comprehensive federal law specifically related to climate change or the reduction of GHGs, regulation under the federal Clean Air Act is being implemented with the U.S. Environmental Protection Agency (EPA) in a lead role. The following federal regulations are related to climate change and GHG emissions.

#### 2.1.1.1 Mandatory Greenhouse Gas Reporting Rule (2009)

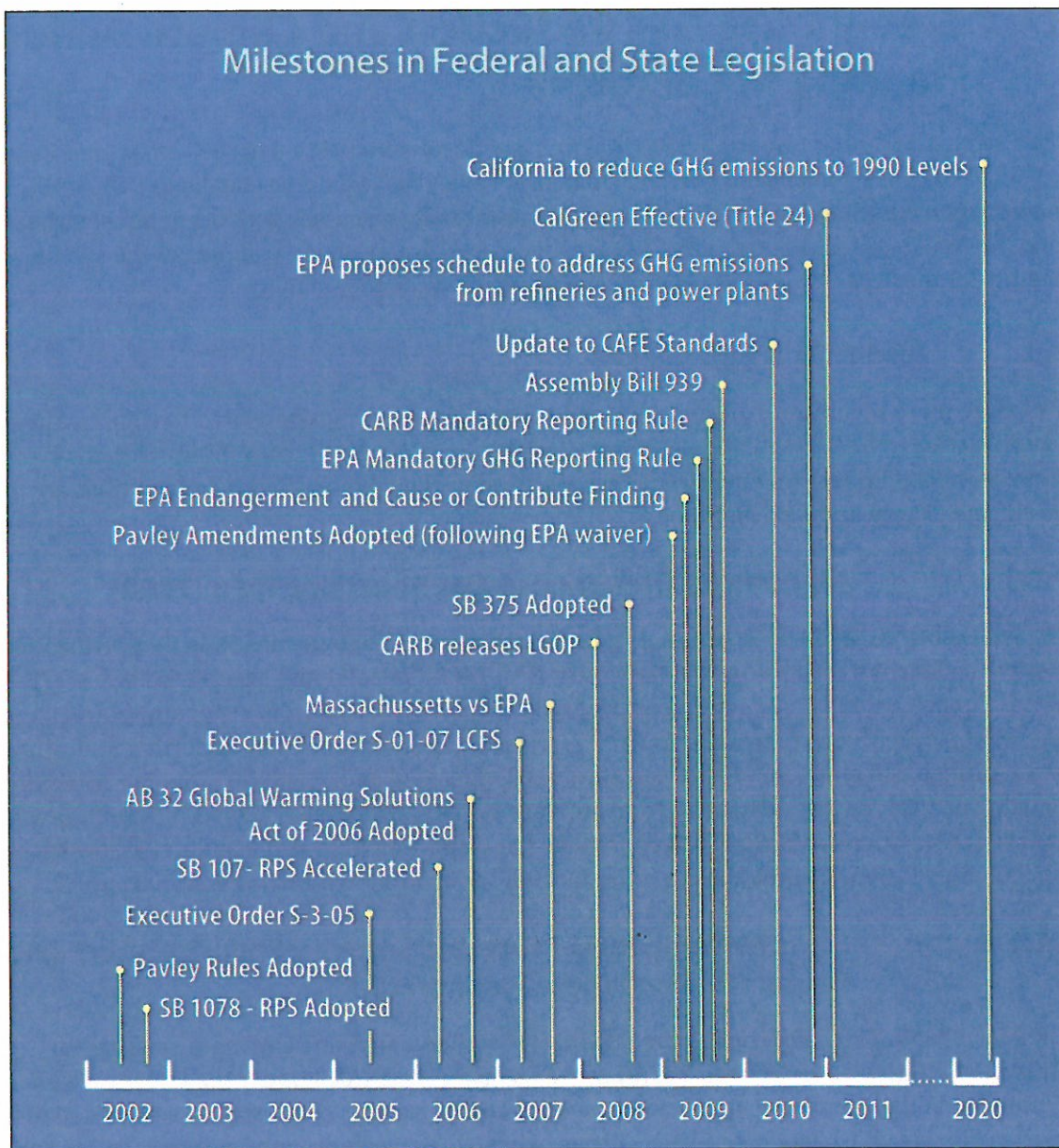
On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), which required EPA to develop “mandatory reporting of greenhouse gasses above appropriate thresholds in all sectors of the economy...” The Reporting Rule applies to most entities that emit 25,000 metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub>) or more per year. Starting in 2010, facility owners were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for EPA to verify annual GHG emissions reports.

#### 2.1.1.2 U.S. Environmental Protection Agency Endangerment and Cause and Contribute Findings (2009)

On December 7, 2009, EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act (CAA.) Under the Endangerment Finding, EPA finds that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and hydrofluorocarbons (HFCs)—in the atmosphere threaten the public health and welfare of current and future generations. Under the Cause or Contribute Finding, EPA found that the combined emissions of these well-mixed GHGs from new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not by themselves impose any requirements on specific industries or other entities. However, this action was a prerequisite to finalizing EPA's corporate average fuel economy (CAFE) standards for light-duty vehicles for future years.

**Figure 2-1. Milestones in Federal and State Legislation and Regulation**





### **2.1.1.3 Updates to Corporate Average Fuel Economy Standards (2010/2012)**

The current CAFE standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and the state of California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25% by 2016 (resulting in fleet average of 35.5 miles per gallon or mpg by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be deemed in compliance with state requirements. The federal government issued new standards in summer 2012 for model years 2017–2025, which will require a fleet average in 2025 of 54.5 mpg.

## **2.1.2 State Regulation**

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation is not directed at citizens or jurisdictions specifically, but rather establishes a broad framework for the state’s long-term GHG reduction and climate change adaptation program. Several executive orders related to the state’s evolving climate change policy have also been adopted. The following state regulations related to climate change and GHGs may apply to implementation of the climate change element.

### **2.1.2.1 Executive Order S-03-05 (2005)**

Signed by Governor Arnold Schwarzenegger on June 1, 2005, Executive Order S-3-05 asserts that California is vulnerable to the effects of climate change. To combat this concern, Executive Order S-3-05 established the following GHG emissions reduction targets for state agencies.

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

Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies’ efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions. The secretary of the California Environmental Protection Agency (Cal-EPA) is required to report to the governor and state legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.

### **2.1.2.2 Assembly Bill 1493—Pavley Rules (2002, Amendments 2009)**

Known as “Pavley I,” AB 1493 standards were the nation’s first GHG standards for automobiles. AB 1493 requires the California Air Resources Board (CARB) to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as “Pavley II”, now referred to as the “Advanced Clean Cars” measure) has been proposed for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 (and more for years beyond 2020) and reduce GHG emissions from the

transportation sector in California by approximately 14%. In June 2009, EPA granted California's waiver request enabling the state to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

EPA and CARB have worked together on a joint rulemaking to establish GHG emissions standards for model-year 2017–2025 passenger vehicles. As noted above, the federal government completed rulemaking in summer 2012 resulting in adoption of new standards that would lead to fleet average of 54.5 mpg in 2025.

### **2.1.2.3 Senate Bills 1078 (2002), Senate Bill 107 (2006) and Senate Bill 2 (2011)—Renewable Portfolio Standard**

SB 1078 and SB 107, California's Renewable Portfolio Standard (RPS), obligates investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010. The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are jointly responsible for implementing the program. Senate Bill 2 (2011) set forth a longer-range target of procuring 33% of retail sales by 2020.

### **2.1.2.4 Assembly Bill 32—California Global Warming Solutions Act (2006)**

In September 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes a cap on statewide GHG emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emission levels. Under AB 32, CARB is required to take the following actions.

- Adopt early action measures to reduce GHGs.
- Establish a statewide GHG emissions cap for 2020 based on 1990 emissions.
- Adopt mandatory reporting rules for significant GHG sources.
- Adopt a scoping plan indicating how emission reductions would be achieved through regulations, market mechanisms, and other actions.

Adopt regulations needed to achieve the maximum technologically feasible and cost-effective reductions in GHGs.

There is presently discussion by CARB and some members of the California legislature about establishing a reduction target in law for the period after 2020, including 2030 and possibly 2050, but the timing for potential legislation is uncertain.

### **2.1.2.5 Executive Order S-01-07—Low Carbon Fuel Standard (2007)**

Executive Order S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and (2) that an LCFS for transportation fuels be established in California. The executive order initiated a research and

regulatory process at CARB. CARB developed the LCFS regulation pursuant to the authority under AB 32 and adopted it in 2009.<sup>1</sup>

### **2.1.2.6 Senate Bill 375—Sustainable Communities Strategy (2008)**

SB 375 provides for a new planning process that coordinates land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans, developed by metropolitan planning organizations (MPOs) to incorporate a sustainable communities strategy (SCS) in their regional transportation plans (RTPs). The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development.

SCAG is the MPO responsible for the southern California region that includes San Bernardino County and the City of Victorville. SCAG adopted an RTP/SCS in April 2012 designed to reduce passenger and light-duty vehicle per capita GHG emissions by 8% by 2020 and by 13% by 2035 compared to 2005 per capita GHG emissions levels. The RTP/SCS includes a combination of land use and transportation strategies to reduce VMT and associated GHG emissions. However, it should be noted the land use pattern in the SCS is not mandatory as local land use agencies retain their jurisdiction and authority over land use planning. The Regional Housing Needs Allocation (RHNA) must be consistent with the SCS and local cities must meet the RHNA for their city in their housing elements, but the RHNA does not specify the location or design of new housing, which is a prerogative of local planning.

### **2.1.2.7 California Energy Efficiency Standards for Residential and Nonresidential Buildings—Title 24 (2008), Green Building Code (2011), Title 24 Update (2014)**

California has adopted aggressive energy efficiency standards for new buildings and has been continually updating them for many years. The latest updated standards were adopted in 2008. Also, in 2008, the California Building Standards Commission adopted the nation's first green building standards, which include standards for many other built environment aspects apart from energy efficiency. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (24 California Code of Regulations [CCR]). Part 11 establishes voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The voluntary standards took effect on January 1, 2011. The latest update of the Title 24 energy efficiency standards was adopted in mid-2012 and went into effect July 1, 2014.

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<sup>1</sup> The CARB approved the LCFS on April 23, 2009 and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. The CARB appealed this ruling in 2012 and on September 18, 2013, a 9<sup>th</sup> U.S. Circuit Court of Appeals panel upheld the LCFS, ruling that the program does not violate the Commerce Clause, and remanded the case to the Eastern District.

### **2.1.2.8 California Air Resources Board Greenhouse Gas Mandatory Reporting Rule Title 17 (2009)**

In December of 2007, CARB approved a rule requiring mandatory reporting of GHG emissions from certain sources, pursuant to AB 32. Facilities subject to the mandatory reporting rule started to report their emissions from the calendar year 2009 and had to have those emissions verified by a third party in 2010. In general the rule applies to facilities emitting more than 25,000 MTCO<sub>2e</sub> in any given calendar year or electricity generating facilities with a nameplate generating capacity greater than 1 megawatt (MW) and/or emitting more than 25,000 MTCO<sub>2e</sub> per year. Additional requirements also apply to cement plants and entities that buy and sell electricity in the state.

### **2.1.2.9 State CEQA Guidelines (2010)**

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the State CEQA Guidelines emphasize the necessity to determine potential climate change effects of the project and propose mitigation as necessary. The State CEQA Guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds, but require the preparation of an environmental impact report (EIR) if “there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements” (Section 15064.4).

The guidelines were updated in 2010 to address GHG emissions. State CEQA Guidelines section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others, measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency’s decision; implementation of project features, project design, or other measures which are incorporated into the project to substantially reduce energy consumption or GHG emissions; offsite measures, including offsets that are not otherwise required, to mitigate a project’s emissions; and, measures that sequester carbon or carbon-equivalent emissions.

### **2.1.2.10 Greenhouse Gas Cap-and-Trade Program (2011)**

On October 20, 2011, CARB adopted the final cap-and-trade program for California. The California cap-and-trade program will create a market-based system with an overall emissions limit for affected sectors. The program is currently proposed to regulate more than 85% of California’s emissions and will stagger compliance requirements according to the following schedule: (1) electricity generation and large industrial sources (2012); (2) fuel combustion and transportation (2015). The first auction was in late 2012 with the first compliance year was in 2013.

## **2.1.3 Local Governments**

The AB 32 Scoping Plan lays out California’s plan for achieving the GHG reductions required by AB 32. Specifically the Scoping Plan describes a list of measures that the state will undertake, and the expected GHG reductions associated with these measures before 2020. Because the state does not have jurisdictional control over many of the activities that produce GHG emissions in California, the AB 32 Scoping Plan articulates a unique role for local governments in achieving the state’s GHG reduction goals. The AB 32 Scoping Plan recommends local governments reduce GHG emissions from both their municipal operations and the community at large to a level that is 15% below

current levels. The 15% recommendation was based on CARB's estimate of 2005–2008 emissions at the time of the scoping plan because at that time CARB had not yet completed actual inventories for those years. In subsequent years, CARB completed the inventories for the 2005–2008 years. In order to meet the AB 32 target of 1990 levels, the state would have to reduce its emissions by 9 to 11% below 2005–2008 levels. CARB has not updated its recommendations to local governments since the 2008 adoption of the Scoping Plan.

In response to the AB 32 and the AB 32 Scoping Plan, many jurisdictions across California have completed a GHG Inventory and Reduction Plan, commonly called a Climate Action Plan or CAP. These plans generally address two types of emissions:

- The “community inventory”—emissions that arise from the community at large (residents, businesses, and their associated activities within the jurisdictional boundary).
- The “municipal inventory”—emissions that arise from the county/city's operations only (county/city buildings, vehicle fleet, activities required to provide services to the jurisdiction).

More than 50 jurisdictions in southern California have completed a community or municipal CAP, or both, including the City of Los Angeles, San Bernardino County, Anaheim, Beverly Hills, Pasadena, Hesperia, Apple Valley, and many others.

## 2.2 What Are We Already Doing?

This section describes large scale GHG planning efforts in southern California, including regional transportation planning; utility programs; SANBAG; and efforts in unincorporated San Bernardino County and several cities in San Bernardino County.

### 2.2.1 Regional Transportation Planning

On April 4, 2012, the Regional Council of SCAG adopted the *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future*. The RTP/SCS is the culmination of a multi-year effort involving stakeholders from across the SCAG Region. SCAG has prepared RTPs for the southern California region for over 30 years, with the primary goal of increasing mobility for the region's residents and visitors.

The 2012–2035 RTP/SCS includes the following key points.

- A strong commitment to reduce emissions from transportation sources to comply with SB 375, improve public health, and meet the National Ambient Air Quality Standards as set forth by the federal Clean Air Act. As such, the 2012–2035 RTP/SCS contains a regional commitment for the broad deployment of zero- and near-zero criteria pollutant emission transportation technologies in the 2023–2035 time frame and clear steps to move toward this objective. This strategy will have many co-benefits, including energy security, cost certainty, increased public support for infrastructure, GHG reduction, and economic development.
- A transportation infrastructure investment strategy that will benefit southern California, the state, and the nation in terms of economic development, competitive advantage, and overall competitiveness in the global economy in terms of attracting and retaining employers in the Southern California region.

- A blueprint for improving quality of life for southern California residents by providing more choices for where they will live, work, and play, and how they will move around. It emphasizes transit and active transportation to allow residents to lead healthier, more active lifestyles.
- It is important to note that the land use pattern adopted in the SCS is not a mandatory land use pattern and no local government is obligated to amend their general plans to be consistent with the assumed land use pattern in the SCS if there are differences between a city's general plan and the land use pattern assumed in the SCS. SB 375 gave no authority to MPOs for local land use planning which is reserved for the authority of local cities and counties.

## 2.2.2 Utility/Regional Agency Incentive Programs

Local and regional utility providers and other agencies, including Southern California Edison, Southwest Gas Corporation, and Mojave Desert Air Quality Management District, have a wide range of incentive and education programs aimed at promoting energy efficiency and renewable energy use. These are summarized below.

### 2.2.2.1 Southern California Edison Programs

- **Income Qualified Programs—Energy Management Assistance Program:** This program helps income-qualified households conserve energy and reduce their electricity costs. Southern California Edison (SCE) pays all the costs of purchasing and installing energy-efficient appliances and equipment, which are free to eligible customers.
- **Mobile Energy Unit:** The Mobile Energy Unit (MEU) promotes energy-efficiency solutions and energy management for both residential and business customers.
- **Energy Solutions:** SCE provides their customers with a home energy survey, residential energy guides, and energy saving tips.
- **Energy Management Solutions:** SCE provides its commercial customers with energy management solutions by industry sector in order to cut costs and greenhouse gas emissions.
- **Refrigerator & Freezer Recycling Program:** SCE hauls away old refrigerators and freezers for free and provides a \$50 incentive to customers.
- **Home Energy Efficiency Survey:** SCE provides its residential customers a 15-minute survey and helps them find tips to maximize savings, and useful information about rebates that they can qualify for. The results are customized for each household.
- **Incentives For Home Energy Upgrades:** SCE provides home energy-efficiency product rebates on products such as compact fluorescent (CFL) and energy efficiency lighting, Energy Star® refrigerators, energy efficiency water heaters, Energy Star air conditioners, whole-house fans, and energy-efficient evaporative cooling systems.
- **Plug-In Electric Vehicle Survey & Checklist:** SCE provides a survey and checklist to help customers with electric vehicles set up their homes.
- **Renewables Standard Contract Program:** SCE provides a standardized procurement process (for renewable power generation projects not to exceed 20MW) that leads to quicker execution of the project, relative to other procurement processes.

- **New Solar Homes Partnership:** The New Solar Homes Partnership program, part of the California Solar Initiative, provides financial incentives and other support for installing eligible solar generating systems on new residential buildings—single family, income-eligible, and multifamily housing.
- **California Solar Initiative Thermal Program:** SCE offers incentive rebates for electric-displacing solar water heating systems in its service territory.
- **Multifamily Affordable Solar Housing:** This program is part of the California Solar Initiative. It offers incentives for installing eligible photovoltaic systems for qualifying multifamily affordable housing. It is designed to subsidize photovoltaic systems in multifamily housing, which will offset electricity loads and provide economic benefits for housing property owners and managers as well as building tenants.
- **Solar Training Classes:** Through the California Solar Initiative, SCE provides multiple solar training classes for homeowners, contractors, commercial entities, and thermal contractors.
- **Solar Rooftop Program:** SCE incurs photovoltaic installation costs and leases rooftop space from building owners in this solar rooftop program.
- **Self-Generation Incentive Program:** SCE customers with a demand of 30 kilowatts (kW) or more can receive a cash incentive from \$0.60 to \$4.50 per watt for installing qualifying electricity generating equipment under SCE's Self Generation Incentive Program.
- **Green Jobs Education Initiative:** The Green Jobs Education Initiative helps students pursue education in green jobs fields. SCE's commitment of \$1 million provides grants of \$100,000 each to ten California community colleges that offer green jobs training programs.

#### 2.2.2.2 Southwest Gas Corporation Programs

- **Commercial Service Planning Representatives:** Southwest Gas Corporation's commercial service planning representatives are trained in energy-related aspects of business, and can perform a variety of equipment specific evaluations to optimize a company's energy decisions, including providing energy savings option information.
- **California Low-Income Energy Efficiency Weatherization Program:** In order to participate in this program, a customer must meet the income qualifications set forth by CPUC.
- **Winter Energy and Money Saving Ideas:** Southwest Gas Corporation provides ideas for customers to save energy and money.

#### 2.2.2.3 Mojave Desert Air Quality Management District Programs

- **Voluntary Accelerated Vehicle Retirement Program (VAVR):** Offers High Desert owners of older, higher polluting vehicles manufactured in 1995 or before (eligibility year changes annually) \$1000 for scrapping their operable cars, vans and light and medium duty trucks. Aimed at removing the highest emitting vehicles from the road and reducing vehicular emissions, including greenhouse gases.
- **Electric Lawn Mower Exchange Event:** An annual event held each spring at the Victorville County Fairgrounds which provides MDAQMD residents the opportunity to scrap their old, gas-powered lawn mower and purchase an emission-free electric model. Lawn mowers and

gasoline-powered lawn care equipment are the nation's leading source of off road emissions as well as a considerable source of greenhouse gases.

- **“Cash for Grass” Scrapping Program:** Through a partnership with the Mojave Water Agency (MWA), the MDAQMD offers a \$50 gift card to a local home improvement store to any High Desert resident who scraps their gas-powered lawn mower and removes their lawn and replaces it with a water efficient landscape through MWA's “Cash for Grass” program. The average gas-powered mower pollutes at the equivalent rate of 40 cars.
- **Various Grant Programs:** Including funding from AB2766 vehicle registration fees and the Carl Moyer Program. These State programs fund projects such as park and ride lots and public vehicle charging stations as well as assist in replacing or upgrading diesel-powered equipment with lower emission technology for heavy duty vehicles, emergency vehicles, agricultural equipment and locomotives.
- **Various Award Programs:** Various awards are given to High Desert gasoline stations that pass quality inspections and receive no air quality violations. Awards are also given to businesses, schools or groups that make contributions to the prevention of air pollution.
- **Education and Outreach:** The MDAQMD administers a comprehensive public outreach program that educates residents and businesses of the Mojave Desert about the important role they play in reducing air pollution emissions in the High Desert. Community Relations and Education Staff also staffs booths at community events and gives presentations at conferences.

### 2.2.3 SANBAG's Long Range Transit Plan

SANBAG's *Long Range Transit Plan* (LRTP) (San Bernardino Associated Governments 2009) addresses San Bernardino County's current and future travel challenges, including addressing growing travel demand. The goal of the LRTP is to provide transit facilities and services to support this demand. The LRTP prioritizes goals and projects for transit growth and connects land use and transportation strategies. The draft LRTP considers four major alternatives to transit mobility, one of which will be designated the “final alternative.” The LRTP identifies premium transit routes and station locations that helped to develop the SCS for areas in the County.

### 2.2.4 City of Victorville

The City of Victorville has a number of current initiatives that promote actions that help to limit and reduce GGH emissions:

- **Non-Motorized Transportation Plan:** The purpose of the plan is to provide for a safe network of trails and bikeways for pedestrians, bikers and others that promote healthy lifestyles and reduce automobile trips and improve the environment.
- **Solar Rooftop Permitting Ordinance:** This Ordinance ensures the fast track permitting of residential rooftop solar systems. The streamlined process allows for the removal of any governmental barriers that would impede the issuance of permits, therefore improving the environment by increasing the number of homes with solar electric systems.
- **Waste Programs and Improvements:** The City has a mandatory recycling program for both its residential and commercial customers. The recycling now occurring at its joint recycling facility



will expand greatly in the near future with current plans into the City for several improvements. These improvements include a composting facility that accepts green, wood and food waste, therefore diverting a significant quantity of organic materials from the landfill. This diversion is anticipated to have a very large GHG reduction impact. The City has also recently required its franchised refuse hauler Burrtec Waste to convert its entire trash truck fleet from diesel engines to GNG, therefore greatly reducing on-road emissions.

## 2.3 Basic Terms and Concepts

This section defines terms and explains basic concepts inherent to understanding GHG inventories and reductions, as well as the basics of climate change science. Important terms like *community inventory* and *business-as-usual* are defined below, along with a description of global warming and major greenhouse gases.

### 2.3.1 Basic Terms

**Assembly Bill 32 (AB 32):** The California Global Warming Solutions Act of 2006, widely known as AB 32, requires CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. The heart of the bill is the requirement that statewide GHG emissions must be reduced to 1990 levels by the year 2020 of the AB 32 Scoping Plan.

**AB 32 Scoping Plan:** The Scoping Plan for AB 32 was developed by CARB and approved in December 2008. The plan has a range of GHG reduction actions, which include direct regulations, compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. CARB has already adopted numerous regulations and rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In August 2011, the Scoping Plan was reapproved by the Board, and includes the Final Supplement to the Scoping Plan Functional Equivalent Document (FED). The Scoping Plan was updated in 2014 to track progress toward meeting the AB-32 target.

**Business-as-Usual (BAU):** BAU represents a future scenario that does not consider the possible reduction of GHG emissions that may result from any legislation or regulation that would go into effect after the baseline year. The BAU projections are estimates of future emissions based on energy and carbon intensity in the existing economy with the expected increases in population and economic growth in the future.

**Community Inventory:** The community inventory includes GHG emissions occurring in association with the land uses within the jurisdictional boundaries of the City's planning areas, and generally consists of emissions sources that the City can influence or control. The inventory includes emissions that occur both inside and outside the jurisdictional boundaries, but only to the extent that such emissions are due to land uses and activities within the City.

**Emissions Type:** GHG emissions can be defined as either direct (emissions that occur at the end use location, such as natural gas combustion for building heating) or indirect (emissions that result from consumption at the end use location but occur at another location, such as emissions that occur at the power plant itself but result from residential electricity use of in-home appliances or other uses). This report addresses both types of emissions. In this report, the term emission refers to GHG emissions and not to emissions of air quality pollutants.

**Unit of Measure:** The unit of measure used throughout this GHG inventory is MTCO<sub>2e</sub>. Presenting inventories in CO<sub>2</sub> equivalence allows characterization of the complex mixture of GHG as a single unit taking into account that each gas has a different global warming potential (GWP). A million MTCO<sub>2e</sub> is abbreviated as MMTCO<sub>2e</sub>.

## 2.3.2 Emissions Sectors Explained

GHG emissions and reductions presented in this document are done so in terms of “sectors.” The term sector refers to the type of emissions or the type of activity that produces the emission. For example, the on-road transportation sector includes emissions from the cars and trucks driven on the region’s roads and freeways. A brief description of each sector considered in this document follows in Table 2-1, with a list of the GHG reduction measures included in this CAP that work in that sector. Chapter 4 contains a glossary of all GHG reduction measures and Appendix B contains a detailed description of the methods used to calculate the associated GHG reductions.

**Table 2-1. Emissions Sectors and Reduction Measures**

<b>Sector</b>	<b>How GHG emissions are avoided through State or Local measures in this CAP</b>	<b>Associated Reduction Measures</b>
<p><b>Building Energy</b> Emissions result from the use of electricity and natural gas by residential and commercial buildings.</p>	New construction built to a high energy-efficiency standard; retrofits to existing buildings to make them more energy efficient; changes in behavior or building management to be more efficient; and the increased use of renewable energy to power buildings.	State-1, State-2, State-3, State-4, State-5; Energy-7, Energy-8; PS-1.
<p><b>On-road Transportation</b> Emissions result from the burning of gasoline and diesel fuel by light, medium and heavy duty vehicles that travel on the region's roads and freeways.</p>	Increased fuel economy of all vehicles; reduced carbon content of the fuel; reduced vehicle miles traveled (increased use of alternative modes of transportation, carpooling, alternative work schedules and smart growth).	State-6, State-7, State-8; On-Road-2; PS-1.
<p><b>Off-Road Transportation</b> Emissions result from the burning of gasoline and diesel fuel by off-road equipment and vehicles.</p>	Increased fuel economy of all vehicles and equipment; reduced carbon content of the fuel; idling limitations, and increased use of electric or alternatively fueled vehicles and equipment.	State-7;
<p><b>Agriculture</b> Emissions result from the application of fertilizer and the management of manure. Emissions also result from the burning of gasoline and diesel fuel by agricultural equipment, but these emissions are captured in the Off-Road equipment sector.</p>	N/A	N/A
<p><b>Solid Waste Management</b> Emissions result from the decay of garbage under the anaerobic conditions present in landfills. This sector captures both the waste that is generated by San Bernardino County residents in the inventory year and the waste that was historically generated by any person or business that has sent waste to a landfill located within San Bernardino County.</p>	Waste reduction and increased methane capture at relevant landfills.	State-9; County-1; PS-1.
<p><b>Wastewater Treatment</b> Emissions result from the energy used to power plants and pump water and also from the chemical</p>	Increased energy efficiency at wastewater treatment plants, water conservation and installation of biogas capture and	Wastewater-3.

Sector	How GHG emissions are avoided through State or Local measures in this CAP	Associated Reduction Measures
and biological breakdown of the waste.	gas to energy technologies.	
<b>Water Conveyance</b> Emissions result from the energy used to bring water from outside the jurisdiction to the border of a jurisdiction, including deliveries from the state water project or Colorado River.	More efficient water pumping equipment and both indoor and outdoor water conservation.	Water-3, Water-4; PS-1.

### 2.3.3 Climate Change and Global Warming

*Climate change* is a term used to describe large-scale shifts in existing (i.e., historically observed) patterns in earth's climate system. Although the climate has historically responded to natural drivers, recent climate change has been unequivocally linked to increasing concentrations of GHGs in earth's lower atmosphere and the rapid timescale on which these gases have accumulated (Intergovernmental Panel on Climate Change 2007a). The rapid loading of GHGs into the atmosphere is primarily due to the burning of fossil fuels since the industrial revolution.

Higher concentrations of heat-trapping GHGs in the atmosphere result in increasing global surface temperatures, a phenomenon commonly referred to as *global warming*. In absence of anthropogenic (i.e., manmade) emissions, GHGs play a critical role in maintaining the earth's temperature for successful habitation by humans and other forms of life.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the industrial revolution. Rising atmospheric concentrations of GHGs in excess of natural levels have increased global surface temperatures, which in turn result in changes to the earth's climate system. Warming of the earth's lower atmosphere induces large-scale changes in planetary systems, including ocean circulation patterns, precipitation patterns, global ice cover, and biological distributions (Intergovernmental Panel on Climate Change 2007a, 2007b). Some of those changes would result in specific impacts at the state and local level.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC identifies the following compounds as key anthropogenic GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, SF<sub>6</sub>, and HFCs (Intergovernmental Panel on Climate Change 2007a). Each is discussed in detail below.

To simplify reporting and analysis, methods have been established to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the GWP methodology defined in IPCC reference documents (Intergovernmental Panel on Climate Change 1996, 2001:241–280). IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO<sub>2</sub>e, which compares the gas in question to that of the same mass of CO<sub>2</sub> (CO<sub>2</sub> has a GWP of 1 by definition).

Table 2-2 lists the global warming potential of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, SF<sub>6</sub>, and HFCs; their lifetimes; and abundances in the atmosphere.

**Table 2-2. Lifetimes and Global Warming Potentials of Several Greenhouse Gases**

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2005 Atmospheric Abundance
CO <sub>2</sub> (ppm) <sup>a</sup>	1	50–200	379
CH <sub>4</sub> (ppb)	21	9–15	1,774
N <sub>2</sub> O (ppb)	310	120	319
CF <sub>4</sub> (ppt) <sup>a</sup>	6,500	50,000	74
C <sub>2</sub> F <sub>6</sub> (ppt) <sup>a</sup>	9,200	10,000	2.9
SF <sub>6</sub> (ppt)	23,900	3,200	5.6
HFC-23 (ppt)	11,700	264	18
HFC-134a (ppt)	1,300	14.6	35
HFC-152a (ppt)	140	1.5	3.9

Sources: Intergovernmental Panel on Climate Change 1996, 2001:388–390.

Notes: ppm = parts per million

ppb = parts per billion

ppt = parts per trillion

<sup>a</sup> CF<sub>4</sub> and C<sub>2</sub>F<sub>6</sub> are PFCs

## 2.3.4 Principal Greenhouse Gases

### 2.3.4.1 Carbon Dioxide

CO<sub>2</sub> is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. Its atmospheric lifetime of 50–200 years ensures that atmospheric concentrations of CO<sub>2</sub> will remain elevated for decades, even after mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007a). The primary sources of anthropogenic CO<sub>2</sub> in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO<sub>2</sub> can be removed from the atmosphere by photosynthetic organisms (e.g., plants and certain bacteria).

Atmospheric CO<sub>2</sub> has increased from a preindustrial concentration of 280 parts per billion (ppb) to 391 parts per million (ppm) in 2005 (Carbon Dioxide Information Analysis Center 2012).

### 2.3.4.2 Methane

CH<sub>4</sub>, the main component of natural gas, is the second most abundant GHG and has a GWP of 21 (Intergovernmental Panel on Climate Change 1996). Sources of anthropogenic emissions of CH<sub>4</sub> include growing rice, raising cattle, using natural gas, landfill outgassing, and mining coal (National Oceanic and Atmospheric Administration 2005). Certain land uses also function as both a source and sink for CH<sub>4</sub>. For example, the primary terrestrial source of CH<sub>4</sub> are wetlands, whereas undisturbed, aerobic soils act as a CH<sub>4</sub> sink (i.e., they remove CH<sub>4</sub> from the atmosphere).

Atmospheric CH<sub>4</sub> has increased from a pre-industrial concentration of 715 ppb to 1,871 ppb in 2005 (Carbon Dioxide Information Analysis Center 2012).

#### **2.3.4.3 Nitrous Oxide**

N<sub>2</sub>O is a powerful GHG, with a GWP of 310 (Intergovernmental Panel on Climate Change 1996). Anthropogenic sources of N<sub>2</sub>O include agricultural processes (e.g., fertilizer application), nylon production, combustion of fossil fuel by power plants, nitric acid production, and vehicle emissions. N<sub>2</sub>O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N<sub>2</sub>O, which can be released to the atmosphere by diffusion. In the United States more than 70% of N<sub>2</sub>O emissions are related to agricultural soil management practices, particularly fertilizer application.

N<sub>2</sub>O concentrations in the atmosphere have increased 19%, to 319 ppb in 2008 from pre-industrial levels of 270ppb to 322 ppb (World Meteorological Association, 2008).

#### **2.3.4.4 Perfluorinated Carbons**

The most abundant PFCs are CF<sub>4</sub> (PFC-14) and C<sub>2</sub>F<sub>6</sub> (PFC-116). These human-made chemicals are emitted largely from aluminum production and semiconductor manufacturing processes. PFCs are extremely stable compounds that are destroyed only by very high-energy ultraviolet rays, which results in very long lifetimes. They have high GWPs ranging from 6,500 for CF<sub>4</sub> to 9,200 for C<sub>2</sub>F<sub>6</sub> (Intergovernmental Panel on Climate Change 1996)

#### **2.3.4.5 Sulfur Hexafluoride**

SF<sub>6</sub> is a human-made chemical used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, semiconductor manufacturing, and also as a tracer chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency 2006). In 2005, atmospheric concentrations of SF<sub>6</sub> were 7.4 parts per trillion (ppt) and steadily increasing (Carbon Dioxide Information Analysis Center 2012). SF<sub>6</sub> is the most powerful of all GHGs listed in IPCC studies, with a GWP of 23,900 (Intergovernmental Panel on Climate Change 1996).

#### **2.3.4.6 Hydrofluorocarbons**

HFCs are human-made chemicals used in commercial, industrial, and consumer products and have high GWPs ranging from 140 to 11,700 (U.S. Environmental Protection Agency 2006). HFCs are generally used as substitutes for ozone-depleting substances (ODS) in automobile air conditioners and refrigerants. As seen in Table 2-2, the most abundant HFCs, in descending order, are HFC-134a, HFC-23, and HFC-152a.

### **2.3.5 Greenhouse Gas Inventories and Emissions Sources**

A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (i.e., for global and national entities) or on a small scale (i.e., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

The majority (83%) of GHG emissions in the United States result from burning fossil fuels. Fossil fuels are burned to create electricity, which powers homes, commercial buildings, and vehicles. Energy used to power buildings is the primary source of GHGs in California and the nation. Vehicle emissions are a close second, comprising approximately 30% of total national emissions and 37% of total statewide emissions (U.S. Environmental Protection Agency 2010; California Air Resources Board 2010). Other sources of GHG emissions include agriculture, land clearing, the landfilling of waste, refrigerants, and certain industrial processes.

Table 2-3 outlines the most recent global, national, and statewide GHG inventories to help contextualize the magnitude of San Bernardino County's GHG emissions.

**Table 2-3. Global, National, State, and Local GHG Emissions Inventories**

Emissions Inventory	CO <sub>2</sub> e (metric tons)
2011 IPCC Global GHG Emissions Inventory	45,913,000,000
2012 EPA National GHG Emissions Inventory	6,526,000,000
2012 CARB State GHG Emissions Inventory	458,680,000

Sources: World Resources Institute 2014; U.S. Environmental Protection Agency 2014; California Air Resources Board 2014.

### 2.3.6 Impacts of Climate Change on Southern California

Increases in the globally averaged atmospheric concentration of GHGs would cause the lower atmosphere to warm, in turn inducing a myriad of changes to the global climate system. These large scale changes would have unique and potentially severe impacts in the western United States, California, and the region surrounding the county. Current research efforts coordinated through CARB, CEC, Cal-EPA, University of California (UC) system, and others are examining the specific changes to California's climate that would occur as the earth's surface warms.

Existing evidence indicates that climate change could impact the natural environment in the following ways, among others.

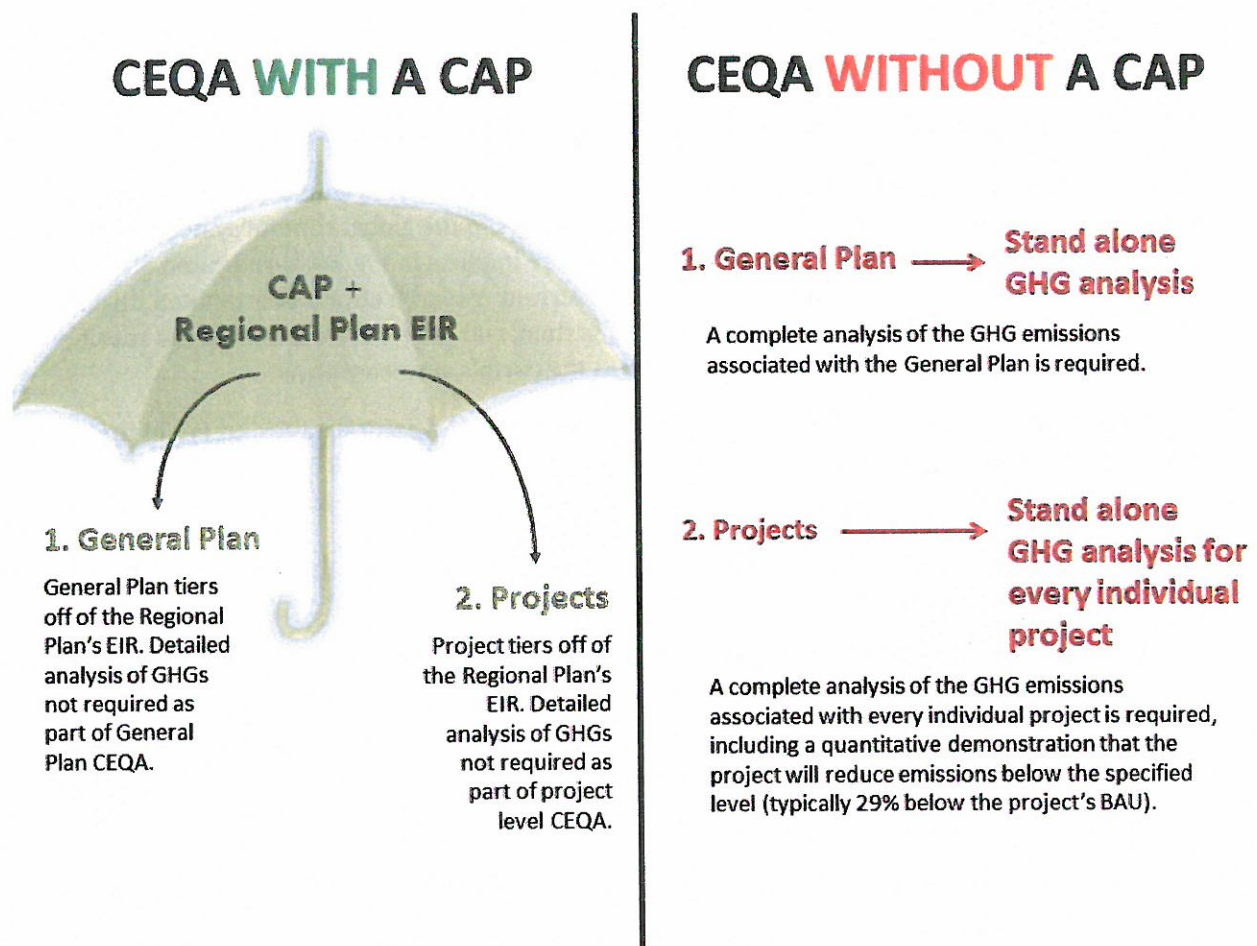
- Rising sea levels along the coastline.
- Extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in the frequency, intensity, and duration of conditions that are conducive to forming air pollution, further exacerbating air quality issues.
- An increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality.
- Reduced water supplies (all end uses).
- Potential increase in the severity of winter storms, affecting peak stream flows and flooding.
- Changes in growing season conditions that could affect agriculture, causing variations in crop quality and yield.

- Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.
- Decreased Sierra snowpack and altered timing and amount of snowmelt; effects on California water supplies and water management including those serving southern California.
- Increased frequency and intensity of wildfires.

## 2.4 Relationship of Climate Action Plans to CEQA and Local General Plans

This section describes the general relationship of CAPs to CEQA and the local general plans, including legal requirements and evolving practice throughout California. Figure 2-2 illustrates these relationships.

Figure 2-2. CAP, General Plans and CEQA



As a discretionary action, prior to adoption of the GHG reduction plan by local cities, CEQA review is required. SANBAG has prepared an EIR that analyzes the physical impacts of the measures selected



by the Partnership cities on the environment. This analysis will be used to complete CEQA compliance prior to consideration of adopting the portions of the plan applicable to SANBAG and to each individual city.

Amendments to the CEQA guidelines in March 2010 describe that CEQA project evaluation of GHG emissions can tier off a programmatic analysis of GHG emissions provided that the GHG analysis (or CAP) includes the following (CEQA Guidelines Section 15183.5).

- *Quantify greenhouse gas emissions*, both existing and projected over a specified time period, resulting from activities within a defined geographic area. This Plan has quantified all primary sectors of GHG emissions within each city for 2008 and 2020. Partnership cities may choose to adopt portions of this document as their individual CAP or build upon the information here to develop a more comprehensive CAP document.
- *Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by a CAP would not be cumulatively considerable.* This Plan includes the different proposed reduction targets of each of the Partnership cities. The collective measures proposed by the Partnership cities, in combination with state measures, would reduce emissions by 16% below 2008 levels and by 27% below 2020 BAU levels, which are roughly consistent with the recommendations in the AB 32 Scoping Plan for municipalities to support the overall AB 32 reduction targets
- *Identify and analyze the GHG emissions* resulting from specific actions or categories of actions anticipated within the geographic area. This Plan analyzes community emissions for each Partnership city as a whole and includes predicted growth expected by 2020.
- *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. This Plan identifies both specific measures and project-level reduction standards (where selected by individual cities) to achieve the overall reduction target.
- *Monitor the plan's progress.* This Plan outlines general monitoring steps. Individual CAPs that utilize this Plan as a base would include locally-specific identification of monitoring actions..
- *Adopt the GHG Reduction Strategy in a public process following environmental review.* For each city that chooses to do so, a CAP would be adopted in a public process. The EIR prepared for this Plan can be used to support local city compliance with CEQA.

Once adopted, subsequent project-level CEQA evaluations of greenhouse gas emissions can tier off of the adopted city CAP, provided that they are being fully implemented by the Partnership city where the project is located, and that the specific project is consistent with all applicable requirements from the relevant adopted city CAP.

The South Coast Air Quality Management District (SCAQMD) adopted an interim GHG significance threshold for stationary source projects where the SCAQMD is the lead agency. SCAQMD does not currently have GHG significance thresholds for development projects. SCAQMD encourages local governments to adopt a qualified GHG reduction strategy consistent with AB 32 goals and the new statewide CEQA guidelines described above. SCAQMD recommends that stationary source projects, consistent with an adopted qualified GHG reduction plan that meets the standards described in the CEQA guidelines, can be presumed to have no significant GHG emissions and do not need to be evaluated against SCAQMD's recommended mass emissions thresholds. For stationary source projects not consistent with an adopted qualified GHG reduction plan, if they exceed a screening

significance threshold level of 10,000 MTCO<sub>2e</sub> of emissions per year, then the project must demonstrate design features and/or other measures to mitigate GHG emissions to the maximum extent feasible, or implement offsite mitigation (GHG reduction projects) to reduce GHG emission impacts to less than the proposed screening level. SCAQMD has draft thresholds for land use projects (residential and commercial development) that similarly allow for tiering off a qualified GHG reduction plan and use of numeric thresholds where a qualified plan has not been adopted. It is not known if the Mojave Desert Air Quality Management District (MDAQMD) has adopted a similar threshold.

As noted above, CEQA Guidelines Section 15183.5 establishes opportunities for tiering for qualified GHG reduction plans. Accordingly, emissions associated with projects that are consistent with the city-adopted GHG reduction plans can be considered less than significant and their contributions to cumulative emissions are not considered cumulatively considerable. Clearly, projects that are consistent with the city-adopted plans would still create emissions; however, they can be approved knowing that overall emissions projected to occur in 2020 would be less than the emissions that would occur in 2020 under BAU. This determination only relies on an individual city's actions relative to its GHG emissions. Provided that a project is within a jurisdiction with a qualified GHG reduction plan that is being implemented in full, tiering can be used. If some of the Partnership cities choose not to adopt CAPs or choose to adopt different targets or measures than described in this Plan, this would not affect the ability of other cities to tier their project analysis from their adopted plans, provided the plans are being implemented.

## 3.1 Introduction

This chapter presents the GHG inventory, 2020 BAU forecast, and GHG emission reductions for the City of Victorville. The following information is presented in this chapter.

For each Partnership city, the following items are presented.

1. **City Summary**—Presents background information for each city, such as its location, socioeconomics, and key points of interest. Demographic information consistent with the 2010 U.S. Census is summarized. An overview of the city's emissions and selected reduction measures is also provided.
2. **Emission Reductions Graphics**—Three graphics are presented here: 1) a bar chart showing the city's 2008 inventory, state/county reductions, local reductions, and unmitigated emissions in 2020, along with the 2020 emissions goal identified by each city; 2) a bar chart showing the 2020 BAU emissions by sector and the 2020 emissions with full implementation of the Plan; and 3) pie charts showing reductions by controlling entity and by sector.
3. **Emissions and Reductions Table**—This table presents the same information as shown in the graphics, including the city's 2008 inventory, 2020 BAU forecast, and reductions by sector.
4. **Reduction Measures Table**—This table presents all reduction measures considered by the city for this CAP, along with GHG reductions and simple descriptions of each measure.
5. **Relevant General Plan Policies**—A summary of general plan policies that are relevant to avoiding or reducing GHG emissions in general, or support specific reduction measures in the Plan. General Plan policies are listed in reference to the specific GHG reduction measures they support. Refer to Chapter 1 for an explanation of the main goal of each reduction category and to Chapter 4 for a definition of each individual reduction measure listed.

The City has selected a set of measures independently of other participating cities' selections within the San Bernardino County Regional GHG Reduction Plan. Selections include both the measure itself and the participation rate associated with each measure. For example, the City chose Solar Installation for Existing Housing (Energy-7) and also chose the specific percentage of homes that are assumed to be retrofitted with solar roofs by the year 2020. The measure selections were based on the City's best judgment about what is feasible for Victorville, and depend on the specific emissions source profile (i.e. inventory) and the anticipated growth within the city.

## 3.2 City of Victorville



### 3.2.1 City Summary

The City of Victorville is located in the western part of the Mojave Desert, also known as the Victor Valley. Victorville is bordered by Adelanto to the west, Apple Valley to the east, and Hesperia to the south. These cities are separated from the San Bernardino Valley cities by the San Bernardino Mountains to the south, accessible through the Cajon Pass on I-15.

Local deposits of limestone and granite brought cement manufacturing to the area during the mid-twentieth century, which remains to this day in the CEMEX facility, one of only 14 cement manufacturing facilities in California. Victorville also owes much of its history and growth to George Air Force Base. Although decommissioned in 1992, a portion of the facility is now the Southern California Logistics Airport, which is one of the largest employers in Victorville. These uses are reflected in Victorville's GHG emissions inventory and reductions selected below. Because cement manufacturing is a highly GHG intense industrial process, these emissions dominate Victorville's GHG emissions profile but are not considered in Victorville's GHG emissions reduction target because the City has no control over plant operations, which are regulated by both the state and local air district.

Victorville covers 75 square miles. The City's general plan indicates that 38% of land uses will be devoted to residential uses but that commercial and industrial uses will continue in Victorville (with approximately 14% of total land use areas). The city has historically been a commerce center for the Victor Valley and will continue to be so. In 2010, the city's population was 115,903 (111,872 in 2008) and the population is expected to grow to 145,345 by 2020, an increase of 30% over 2008, one of the highest in the county. Victorville's demographic composition in 2010 was 16.8% White, 1.4% Black, 4% American Indian and Alaska Native, 0.4% Asian, 22.5% Native Hawaiian and Other Pacific Islander, 6.3% from other races, and 47.8% from two or more races. Persons of Hispanic or Latino origin were 48.8%. Victorville has a higher than average percentage of Black and Hispanic/Latino residents (17% and 48%, respectively, versus the statewide average of 6% and 38%, respectively) and a homeownership rate of 65% (U.S. Census Bureau 2012). Employment in Victorville is projected to increase by 36% by 2020, the highest increase in the county.

Table 3-55 presents socioeconomic data for Victorville, including population, housing (single-family and multifamily), and employment (agricultural, industrial, retail, and nonretail) (Southern California Association of Governments 2012).

**Table 3-55. Socioeconomic Data for Victorville**

Category	2008	2020
Population	111,872	145,345
Housing	31,423	43,687
<i>Single-Family</i>	23,212	32,270
<i>Multifamily</i>	8,211	11,417
Employment	33,705	45,930
<i>Agricultural</i>	31	87
<i>Industrial</i>	4,549	8,132
<i>Retail</i>	11,951	14,426
<i>Non-Retail</i>	17,175	23,285

### 3.2.2 Emission Reductions

The City of Victorville selected a goal to reduce its community GHG emissions to a level that is 29% below its projected GHG emissions level in 2020. In doing so, the City considered a suite of local measures across all emissions sectors and selected the most viable options. The City will meet and exceed its GHG goal for 2020 primarily through state/county measures (~81%) as well as through the selected local (~19%) measures. The Pavley vehicle standards, the state's low carbon fuel standard, the RPS, and other state measures will reduce GHG emissions in Victorville's on-road and building energy sectors in 2020. These state measures exceed the local measures by a large amount. An additional reduction of 67,443 MTCO<sub>2e</sub> will be achieved primarily through the following local measures in order of greatest emissions reduction: GHG Performance Standard for New Development (PS-1); Green Building Ordinance (Energy-3); and Energy Efficiency for Existing Buildings (Energy-1). Victorville's Plan has the greatest impacts on GHG emissions in the building energy, on-road transportation, and off-road equipment sectors.

Regarding on-road transportation, the City has incorporated the Sustainable Communities Strategy On-Road Transportation (Transportation-1) measure to meet the City's goal to reduce greenhouse gases as required by AB32. The measure will include the following.

- Implement the City's adopted Non-Motorized Transportation Plan which includes a citywide system of trails and bike lanes (Class I, II and III) which will reduce vehicle trip generation.
- Adopt the proposed Civic Center Sustainability Specific Plan which will facilitate and encourage walking, jogging and bicycling to reduce vehicle trip generation within the Civic Center area.
- Require new shopping centers, large multi-family developments and large subdivisions to provide bus turnouts for VVTA to facilitate and encourage mass transit, which will reduce vehicle trip generation.
- Support and advocate the City's longstanding goal to extend Metrolink service to downtown Victorville, which may reduce vehicle trip generation in Victorville, but will reduce vehicle trip generation for the region and beyond due to the very large number residents who drive elsewhere for work.

- Continue to encourage job growth within the city which may reduce vehicle trip generation in Victorville, but will reduce vehicle trip generation for the region and beyond due to the very large number residents who drive elsewhere for work.
- Extend the BNSF rail line to SCLA to reduce truck trip generation to and from the warehousing and manufacturing distribution center.
- Open the Nisqualli/La Mesa bridge interchange which will reduce on-road emission by relieving the regions worst traffic congestion, which occurs on Bear Valley Road.
- Encourage and facilitate carpooling to work, including City Hall, which will reduce vehicle trip generation.
- Designate, maintain and expand the city's network of truck routes to facilitate the delivery and export of goods throughout the city, which will reduce vehicle trip generation.
- Provide for development-related incentives for projects which promote transit use or provide shared parking lots for the community.

Integrate State, Regional and local Sustainability/Smart growth principles into the development and entitlement process.

The bars in Figure 3-56 show Victorville's 2008 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after meeting the City's emissions reduction target (i.e., 29% below its projected GHG emissions level in 2020). The contribution of state/county and local reductions are overlaid on the 2020 BAU emissions forecast total ("2020 Plan"), representing the total emissions reductions achieved in 2020. As stated above, state/county reductions account for the majority (~81%) of the total reductions needed to achieve the 2020 target.

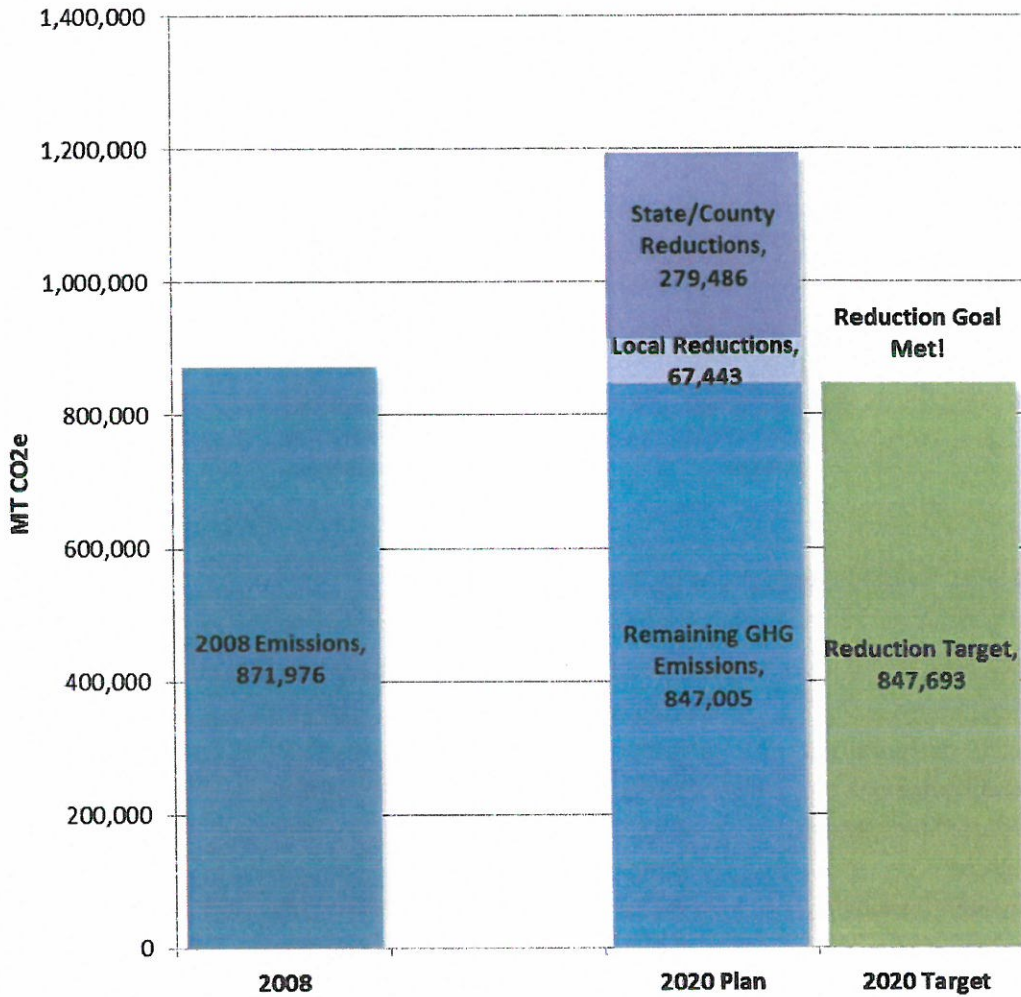
Figure 3-57 presents emissions by sector, for both the 2020 BAU and the 2020 reduction or "Plan" scenarios. The largest emissions contributions are in the on-road transportation, building energy, and off-road equipment emissions sectors.

Table 3-57 summarizes the 2008 inventory, 2020 BAU forecast, and GHG reduction ("Plan") results by sector. It shows the percent reduction in each sector's emissions in 2020 and demonstrates that Victorville exceeds its emissions reduction goal. Emissions sectors with the greatest percent reduction include the building energy, on-road transportation, and off-road equipment sectors.

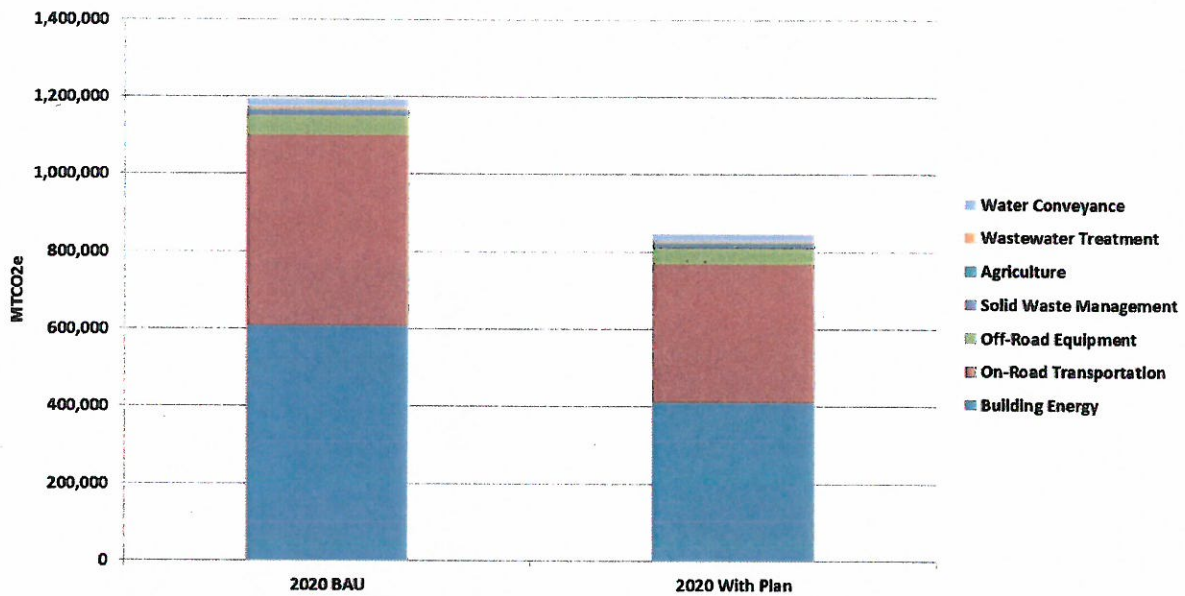
Figure 3-58 presents emission reductions by sector and by control (i.e., state/county control versus local or city control). As stated previously, the majority of emissions reductions are due to state/county measures. Of the state/county measures, the majority of reductions are in the building energy and on-road transportation sectors. Of the local measures, the majority of reductions are in the building energy sector and due to the GHG Performance Standard for New Development (PS-1).

Figure 3-55. Emissions Reduction Profile for Victorville

### GHG Reduction Plan Summary



**Figure 3-56. Emissions by Sector for Victorville**



**Table 3-56. Emission Reductions by Sector for Victorville**

Sector	2008	2020 BAU	Reductions	2020 Emissions with Plan	% Reduction
Building Energy	442,667	607,252	184,659	422,592	30.4%
On-Road Transportation	363,283	493,825	136,149	357,676	27.6%
Off-Road Equipment	38,613	50,458	8,738	41,720	17.3%
Solid Waste Management	7,433	10,551	814	9,737	7.7%
Agriculture	9,095	4,635	0	4,635	0.0%
Wastewater Treatment	4,524	5,915	182	5,733	3.1%
Water Conveyance	6,361	21,298	2,371	18,927	11.1%
GHG Performance Standard*	-	-	14,015	-	-
<b>Total Emissions</b>	<b>871,976</b>	<b>1,193,933</b>	<b>346,928</b>	<b>847,005</b>	<b>29.1%</b>
<i>Reduction Goal</i>	-	-	<b>346,241</b>	<b>847,693</b>	<b>29.0%</b>
<i>Goal Met?</i>	-	-	Yes	Yes	Yes
<i>Reductions Beyond Goal</i>	-	-	<b>688</b>	-	-
Per-Capita Emissions	7.8	8.2	-	5.8	-
Per-Job Emissions	25.9	26.0	-	18.4	-
<i>Excluded Emissions: Stationary Sources</i>	<b>2,235,411</b>	<b>2,528,364</b>	-	-	-

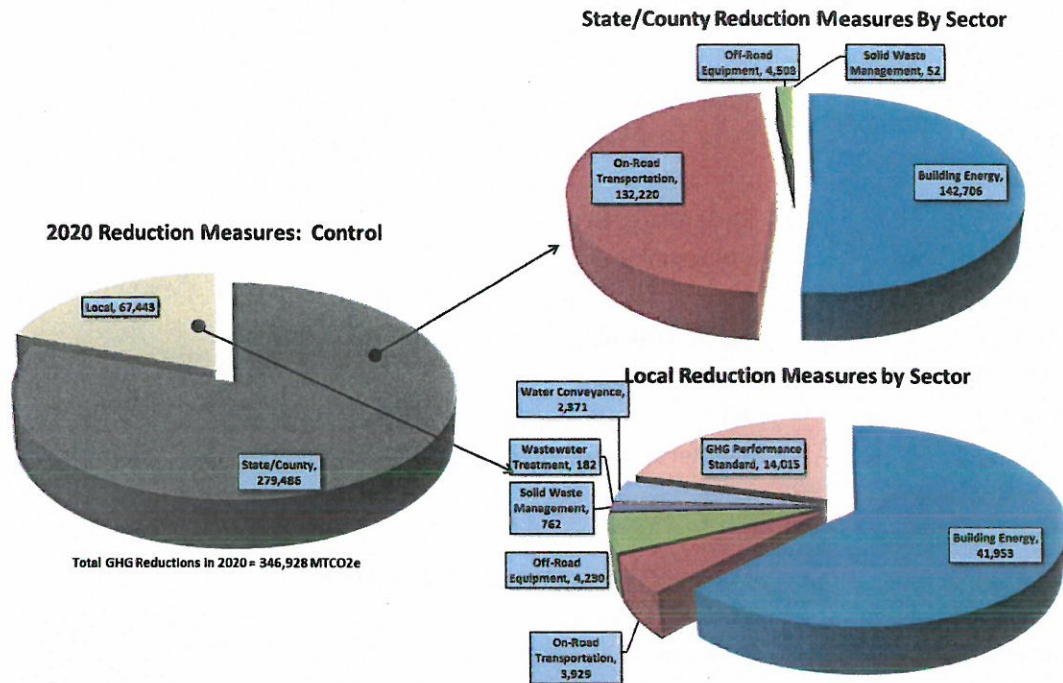
**Notes:**

Values may not sum due to rounding.

\* The GHG Performance Standard for New Development is not a sector of the inventory, but it contributes toward the City's reduction goal by promoting reductions in multiple sectors. Please see Chapter 4 for a complete description of this measure.



**Figure 3-57. Emission Reductions by Control and by Sector for Victorville**



### 3.2.3 Reduction Measures

Table 3-57 presents each reduction measure evaluated for Victorville. For each measure, the short title and estimated GHG reductions in 2020 are listed. Measures are organized by state/county control and local control and listed by sector.

**Table 3-57. GHG Reduction Measures and Estimated 2020 Reductions for Victorville**

Measure Number	Measure Description	Reductions
<b>State/County Measures</b>		
State-1	Renewable Portfolio Standard	82,506
State-2	Title 24 (Energy Efficiency Standards)	37,980
State-3	AB 1109	18,927
State-4	Solar Water Heating	363
State-5	Industrial Boiler Efficiency	2,931
State-6	Pavley plus LCFS	121,280
State-7	AB 32 Transportation Reduction Strategies	10,940
State-8	LCFS: Off-Road	4,508
State-9	AB 32 Methane Capture	40
County-1	San Bernardino County GHG Plan Landfill Controls	11
<b>Local Measures</b>		
<b>Building Energy</b>		
Energy-1	Energy Efficiency for Existing Buildings	6,356
Energy-2	Outdoor Lighting	3,032
Energy-3	Green Building Ordinance	6,551
Energy-4	Solar Installation for New Housing	97
Energy-5	Solar Installation for New Commercial	6,031
Energy-6	Solar Energy for Warehouse Space	2,976
Energy-7	Solar Installation for Existing Housing	6,198
Energy-8	Solar Installation for Existing Commercial / Industrial	2,810
Energy-9	Co-Generation Facilities	360
<i>LandUse-1 (BE)</i>	<i>Tree Planting Programs</i>	<i>182</i>
<i>LandUse-2 (BE)</i>	<i>Promote Rooftop Gardens</i>	<i>47</i>
<i>Wastewater-2 (BE)</i>	<i>Equipment Upgrades</i>	<i>765</i>
<i>Water-1 (BE)</i>	<i>Require Tier 1 Voluntary CALGreen Standards for New Construction</i>	<i>2,146</i>
<i>Water-2 (BE)</i>	<i>Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency</i>	<i>3,766</i>
<i>Water-4 (BE)</i>	<i>Implement SB X7-7</i>	<i>637</i>
<b>On-Road Transportation</b>		
Transportation-1	Sustainable Communities Strategy	3,929
<b>Off-Road Equipment</b>		
OffRoad-1	Electric-Powered Construction Equipment	3,490
OffRoad-2	Idling Ordinance	538
OffRoad-3	Electric Landscaping Equipment	202
<b>Solid Waste Management</b>		
Waste-2	Waste Diversion	762
<b>Wastewater Treatment</b>		
Wastewater-1	Methane Recovery	31
<i>Water-1 (WT)</i>	<i>Require Tier 1 Voluntary CALGreen Standards for New</i>	<i>64</i>

Measure Number	Measure Description	Reductions
	<i>Construction</i>	
<i>Water-2 (WT)</i>	<i>Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency</i>	78
<i>Water-4 (WT)</i>	<i>Implement SB X7-7</i>	10
Water Conveyance		
Water-1	Require Tier 1 Voluntary CALGreen Standards for New Construction	346
Water-2	Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency	609
Water-3	Water-Efficient Landscaping Practices	784
Water-4	Implement SB X7-7	55
<i>Wastewater-3 (WC)</i>	<i>Recycled Water</i>	577
GHG Performance Standard for New Development		
PS-1	GHG Performance Standard for New Development	14,015
Total Reductions		346,928

## Notes:

Values may not sum due to rounding.

The Low Carbon Fuel Standard (LCFS) reduces emissions in both the on-road transportation and off-road equipment sectors, because the standard reduces the carbon content of fuels used in both sectors.

Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water conveyance sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: BE = Building Energy; WT = Wastewater Treatment; WC = Water Conveyance

### 3.2.4 Relevant General Plan Policies

This section summarizes key general plan policies that support the City of Victorville's GHG reduction measures or would contribute to GHG reductions and sustainable practices in the city. All policies listed below are from the Victorville 2008 General Plan unless otherwise noted (Victorville 2008). In addition to state level measures, the City of Victorville selected a variety of measures across nearly all sectors, including a GHG Performance Standard for new development (Table 3-57). However, the City's General Plan includes policies and programs that broadly support energy efficiency and sustainability even if it is not closely tied to a specific measure as part of this plan. Relevant General Plan policies for the specific reduction measures the City selected are listed under the measure name (e.g., Wastewater-1). Policies not tied to a specific GHG reduction measure are listed only by sector (e.g., Off-Road).

#### 3.2.4.1 Building Energy

##### Energy-1. Energy Efficiency for Existing Buildings

- **Implementation Measure 7.2.1.2:** Minimize energy use of new residential, commercial and industrial projects by requiring high efficiency heating, lighting and other appliances, such as cooking equipment, refrigerators, furnaces, overhead and area lighting, and low NO<sub>x</sub> water heaters.

- **Implementation Measure 7.2.1.1:** Incorporate green building principles and practices, to the extent practicable and financially feasible, into the design, development and operation of all City owned facilities.
- **Implementation Measure 7.2.1.6:** Establish a program for retrofitting existing residential and commercial projects to bring existing structures into compliance with 2008 standards.

## Energy-2. Outdoor Lighting

- **Implementation Measure 7.2.1.2:** Minimize energy use of new residential, commercial and industrial projects by requiring high efficiency heating, lighting and other appliances, such as cooking equipment, refrigerators, furnaces, overhead and area lighting, and low NO<sub>x</sub> water heaters.
- **Implementation Measure 7.2.1.1:** Incorporate green building principles and practices, to the extent practicable and financially feasible, into the design, development and operation of all City owned facilities.
- **Implementation Measure 7.2.1.6:** Establish a program for retrofitting existing residential and commercial projects to bring existing structures into compliance with 2008 standards.
- **Implementation Measure 7.2.1.9:** Set target to retrofit city streetlights with goal of 100% replacement (High pressure sodium cut-off or similar street lights).
- **Implementation Measure 7.2.1.10:** Incandescent lighting is discouraged for all new construction; all city facilities should replace incandescent lighting with CF or LED lighting unless light fixture does not exist for particular use.
- **Implementation Measure 7.2.1.11:** Replace traffic signals lights with LED lighting.

## Energy-3. Green Building Ordinance

- **Implementation Measure 7.2.1.1:** Incorporate green building principles and practices, to the extent practicable and financially feasible, into the design, development and operation of all City owned facilities.
- **Implementation Measure 7.2.1.1:** Incorporate green building principles and practices, to the extent practicable and financially feasible, into the design, development and operation of all City owned facilities.
- **Implementation Measure 7.2.1.5:** Require all new construction to be 15% more efficient than 2008 Title 24 Standards.
- **Implementation Measure 7.2.1.7:** Any new multifamily residential construction over 20 dwelling units install solar water heating.
- **Implementation Measure 7.2.1.8:** All new residential construction be pre-plumbed for solar water heating to the maximum extent feasible.
- **Implementation Measure 7.2.1.10:** Incandescent lighting is discouraged for all new construction; all city facilities should replace incandescent lighting with CF or LED lighting unless light fixture does not exist for particular use.

## Energy-4. Solar Installation for New Housing

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.2.1.4:** Implement Assembly Bill 811: Financing for Residential Solar, to the maximum extent feasible.

- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.5:** Require all new residential projects over 100 units to generate electricity on site to maximum extent feasible.

### **Energy-5. Solar Installation for New Commercial**

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.4:** Require all new commercial or industrial development to generate electricity on site to maximum extent feasible.

### **Energy-6. Solar Energy for Warehouse Space**

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.1.1.4:** Require all new commercial or industrial development to generate electricity on site to maximum extent feasible.

### **Energy-7. Solar Installation for Existing Housing**

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.
- **Implementation Measure 7.2.1.4:** Implement Assembly Bill 811: Financing for Residential Solar, to the maximum extent feasible.

### **Energy-8. Solar Installation for Existing Commercial/Industrial**

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.1.1.3:** Establish a photovoltaic target and require new construction to contribute to that target.

### **Energy-9. Co-generation Facilities**

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.
- **Implementation Measure 7.2.1.2:** Minimize energy use of new residential, commercial and industrial projects by requiring high efficiency heating, lighting and other appliances, such as cooking equipment, refrigerators, furnaces, overhead and area lighting, and low NO<sub>x</sub> water heaters.

### 3.2.4.2 On-Road

#### Transportation-1. Sustainable Communities Strategy

- **Implementation Measure 6.1.1.3:** Maintain parking standards that encourage and facilitate alternative transportation modes, including reduced parking standards for transit-oriented developments, mixed-use developments, and preferential parking for carpoolers.
- **Implementation Measure 2.2.1.1:** Consult with the VVTA during planning/design of major new development and redevelopment projects and public facilities, to incorporate appropriate public transit improvements, in optimal locations.
- **Implementation Measure 6.1.1.1:** Require large projects (exceeding 150,000 square feet of development) to incorporate Transportation Demand Management (TDM) techniques, such as promoting carpooling and transit, as a condition of project approval.
- **Implementation Measure 6.1.1.1:** Create a Transit-Oriented Development Plan: identify ideal locations for residential housing near public transportation, identify areas for mixed use development, walkable development near transportation hubs.
- **Implementation Measure 6.1.1.5:** Replace fleet vehicles with more efficient vehicles with a goal of 100% low emission vehicle fleet.
- **Implementation Measure 6.1.1.6:** Any City-operated parking facility must have car pool passes (reduced rate or preferential parking for vehicles with two or more passengers to be verified by attendant).
- **Implementation Measure 6.1.1.7:** Designate preferential parking for hybrid vehicles at City buildings.
- **Implementation Measure 6.1.1.8:** Adopt diesel idling restrictions to limit idling at all commercial facilities.
- **Implementation Measure 6.1.1.9:** Encourage the provision of on-site electrical outlets at all commercial facilities.

### 3.2.4.3 Off-Road

#### Off-Road-1. Electric-Powered Construction Equipment

- **Implementation Measure 6.1.1.4:** Replace existing gasoline powered City vehicles and equipment with clean fuels and vehicles and equipment.

#### Off-Road-3. Electric Landscaping Equipment

- **Implementation Measure 6.1.1.4:** Replace existing gasoline powered City vehicles and equipment with clean fuels and vehicles and equipment.

### 3.2.4.4 Wastewater Treatment

#### Wastewater-1. Methane Recovery

- **Implementation Measure 7.1.1.1:** Continue to work with energy companies and energy developers to develop non-fossil fuel reliant power generation plants within the Planning Area.

### 3.2.4.5 Water Conveyance

#### Water-1. Voluntary CALGreen: New Construction

- **Policy 1.1.1:** Require water conservation measures in the design of new development and major redevelopment, for both public and private projects, such as low water consuming indoor plumbing devices and use of xerophytic landscape materials that require minimal irrigation.
- **Implementation Measure 1.1.1.1:** Offer incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies. For example, offer discounted water rates for projects that achieve U.S. Green Building Council LEED standards for certification relative to water efficiency.

#### Water-2. Renovate Existing Buildings

- **Policy 1.1.1:** Require water conservation measures in the design of new development and major redevelopment, for both public and private projects, such as low water consuming indoor plumbing devices and use of xerophytic landscape materials that require minimal irrigation.
- **Implementation Measure 1.1.1.1:** Offer incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies. For example, offer discounted water rates for projects that achieve U.S. Green Building Council LEED standards for certification relative to water efficiency.

#### Water-3. Water-Efficient Landscaping Practices

- **Policy 1.1.1:** Require water conservation measures in the design of new development and major redevelopment, for both public and private projects, such as low water consuming indoor plumbing devices and use of xerophytic landscape materials that require minimal irrigation.
- **Implementation Measure 7.2.2.2:** Require drought tolerant landscaping in all City public developments, including buildings, parks and street rights-of-way.

## 4.1 Introduction

This section contains a detailed description of all reduction measures discussed in the CAP. Measures are organized below into state, county, and local categories. For local measures, the following sectors are included: building energy, on-road transportation, off-road equipment, agriculture, land use and urban design, solid waste management, wastewater, and water conveyance. An overview of each sector, including a summary of each sector's results, its relative importance (compared to other sectors), and major opportunities for reductions, is also provided.

For each measure, the following information is provided.

**Measure Description:** A description of the measure.

**Entity Responsible for Implementation:** The entity that would be implementing the measure.

**Measure Implementation Details:** More information on how and when the measure would be implemented, including actions, programs and funding sources.

**Level of Commitment:** The assumed level of commitment for each measure.

**Co-Benefits:** Possible co-benefits of each measure are included.

**GHG Reductions** are shown in Table 4-1 for all measures for the total reductions, number of cities participating, and percent contribution to total state or local GHG reductions achieved for the region as a whole based on the reductions for the cities that selected each measure. Cities differed in which measures they chose; all cities did not select all measures. Thus, the level of participation in each measure differs from city to city. All cities benefitted from state measures. Most cities benefitted from regional measures although some cities do not benefit from the regional measures due to their location.

The full methods for the reduction measure calculations are included in Appendix B to the Greenhouse Gas Reduction Plan. The measures selected by each Partnership city and the reductions potential for each city are presented in Chapter 3.

## 4.2 State Measures

Actions undertaken by the state would contribute to GHG reductions in each Partnership city. For example, the state requires electric utility companies to increase their procurement of renewable resources by 2020. Renewable resources, such as wind and solar power, produce the same amount of energy as coal and other traditional sources, but do not emit any GHGs. By generating a greater amount of energy through renewable resources, electricity provided to each city would be cleaner and less GHG intensive than if the state hadn't required the renewable standard. Even though state measures do not always require local government action, emissions reductions achieved by this and other state measures would help lower GHG emissions in each city. This Plan includes ten statewide



initiatives that would contribute to GHG reductions in each city. The majority of these programs would improve building energy efficiency and renewable energy generation. Specifically, Title 24 energy efficiency standards for new residential and nonresidential buildings would require building shells and components be designed to conserve energy and water. Similarly, energy efficiency strategies required by AB 1109 would reduce electricity consumption lighting. Finally, the state's RPS would increase the amount of electricity generated by renewable resources.

Over the past several decades, California has become a leader in establishing initiatives to reduce fuel consumption and on-road vehicle emissions and this continues in combination with federal efforts on the CAFE standards. CARB has also adopted the LCFS, which requires a 10% reduction in the carbon intensity of California's transportation fuels by 2020 and outlined several efficiency measures in the AB 32 Scoping Plan. Together, these measures would reduce light- and heavy-duty vehicle emissions.

A complete list of state programs included in the Plan, as well as anticipated GHG reductions, is presented in this chapter. Appendix B provides more description of each state measure.

#### **4.2.1 State-1: Senate Bill 1078 (2002)/Senate Bill 107 (2006) and Senate Bill 2 (2011) Renewable Portfolio Standard**

**Measure Description:** Obligates IOUs, ESPs, and CCAs to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010 and sets forth a longer-range target of procuring 33% of retail sales by 2020.

**Entity Responsible for Implementation:** IOUs, ESPs, and CCAs are responsible for implementing this measure.

**Measure Implementation Details:** The responsible entities will procure incremental amounts of retail sales each year from renewable sources. By 2020, 33% of retail sales will be procured from renewable sources.

**Co-Benefits:** Reduced air pollution, waste reduction, energy diversity and security, reduced price volatility, economic development, and public health improvements.

#### **4.2.2 State-2: Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen)**

**Measure Description:** Requires that building shells and building components be designed to conserve energy and water. Mandatory and voluntary measures became effective on January 1, 2011, and the guidelines will be periodically updated. Local governments are responsible for adoption and enforcement of the standards. The next energy efficiency update of standards are in 2014 and the CEC intends to update them approximately every 3 years in future years. Note: In some instances, implementation of the CALGreen *voluntary* measures has been identified by local cities as part of their selected local measures.

**Entity Responsible for Implementation:** Local governments are responsible for implementation and enforcement of the standards.

**Measure Implementation Details:** This measure would be implemented in the Partnership cities gradually as new homes are built.

**Co-Benefits:** Reduced energy use, reduced air pollution, resource conservation, increased property value, public health improvements, and increased quality of life.

### 4.2.3 State-3: AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act

**Measure Description:** Structured to reduce statewide electricity consumption in the following ways: 1) At least 50% reduction from 2007 levels for indoor residential lighting, and 2) At least 25% reduction from 2007 levels for indoor commercial and outdoor lighting, by 2018.

**Entity Responsible for Implementation:** The State of California is responsible for implementing this measure.

**Measure Implementation Details:** By 2018, reductions of 50% and 25%, compared to 2007 levels would be achieved.

**Co-Benefits:** Reduced energy use, reduced air pollution, increased property values, and increased quality of life.

### 4.2.4 State-4: AB 1470 (Huffman) Solar Water Heating

**Measure Description:** Creates a \$25 million per year, 10-year incentive program to encourage the installation of solar water heating systems that offset natural gas use in homes and businesses throughout the state.

**Entity Responsible for Implementation:** The State of California is responsible for implementing this measure.

**Measure Implementation Details:** This measure would be implemented gradually as residents replace their heaters with solar water heating systems.

**Co-Benefits:** Reduced energy use, reduced air pollution, increased property values.

### 4.2.5 State-5: Industrial Boiler Efficiency

**Measure Description:** This measure evaluated by CARB would require one or more of the following: annual tuning of all boilers, the installation of an oxygen trim system, and/or a noncondensing economizer to maximize boiler efficiency. A facility could also replace an existing boiler with a new one that is equipped with these systems.

**Entity Responsible for Implementation:** The State of California is responsible for implementing this measure.

**Measure Implementation Details:** This measure would be implemented gradually as industrial facilities replace their boilers.

**Co-Benefits:** Reduced energy use and reduced air pollution.