Appendix D Climate Action Plan

CITY OF SIMI VALLEY
CLIMATE ACTION PLAN

CITY OF SIMI VALLEY

Prepared for:

City of Simi Valley
2929 Tapo Canyon Road
Simi Valley, CA 93063

Prepared by:

ATKINS

650 East Hospitality Lane, Suite 450
San Bernardino, California 92408

Adopted June 4, 2012

ACKNOWLEDGEMENTS

This Greenhouse Gas Emissions Inventory and Reduction Plan is the outcome of work contributed by many individuals. We wish to thank all individuals who contributed to the success of this report, in particular:

City Attorney's Office:

Marjorie Baxter, City Attorney.

Department of Environmental Services:

Christine Silver, Project Manager;
Eric Chen, Assistant Project Manager;
Tony Stewart, Senior Planner;
Cynthia Sabatini, Associate Planner;
Sean Gibson, Associate Planner.

Department of Community Services:

Patrick R. Pieres, Environmental Program Manager.

Department of Public Works:

Kevin Gieschen, Deputy Director of Environmental Compliance;
David Medina, Associate Engineer;
Jeff Harmon, Maintenance Superintendent.

EXECUTIVE SUMMARY

The City of Simi Valley is committed to providing a more livable, equitable, and economically vibrant community through the reduction of greenhouse gas (GHG) emissions. By using energy more efficiently, harnessing renewable energy to power our buildings, recycling our waste, and enhancing access to sustainable transportation modes, we can keep dollars in our local economy, create new green jobs, and improve the community's quality of life. These efforts toward reducing GHG emissions will be in compliance with current and anticipated future State and Federal regulations, including California's landmark AB32, the California Global Warming Solutions Act of 2006.

Simi Valley has established policies that incorporate environmental responsibility into its daily management of residential, commercial, and industrial growth, education, energy, and water use, air quality, transportation, waste reduction, economic development, and open space and natural habitats. This Climate Action Plan takes into account existing policies and future development that is described in the 2012 General Plan, and incorporates common sense approaches and trends in policy and regulatory development to construct a course of action and implementation measures to reduce GHG emissions.

Purpose

This Climate Action Plan (SV-CAP) was developed to meet the following state requirements and City objectives:

- Create a GHG baseline from which to benchmark GHG reductions;
- Provide a plan that is consistent with and complementary to: the GHG emissions reduction efforts being conducted by the State of California through the Global Warming Solutions Act (AB 32); the federal government through the actions of the Environmental Protection Agency; and the global community through the Kyoto Protocol;
- Guide the development, enhancement, and implementation of actions that effectively reduce GHG emissions; and
- Provide a policy document with specific implementation measures meant to be considered as part of the planning process for future development projects.

Goals

To fulfill the purposes of the SV-CAP, the City identified the following achievement goals:

- Provide a list of specific actions that will reduce GHG emissions, with the highest priority given to actions that provide the greatest reduction in GHG emissions and best benefits to the community at the least cost;
- Reduce emissions attributable to Simi Valley to levels at or below 1990 GHG emissions by year 2020 consistent with the target reductions of AB 32; and
- Establish a qualified reduction plan for the City that can be used to streamline the environmental analysis necessary under the California Environmental Quality Act (CEQA).

The SV-CAP achieves the purpose and goals described above by providing: an analysis of GHG emissions and sources attributable to land uses in the City of Simi Valley; estimates on how those emissions are expected to increase; recommended policies and actions that can reduce GHG emissions to meet state, federal, and international targets; a timeline of implementation; and a defined tracking and reporting mechanism that will measure progress toward the goals.

Greenhouse Gas Emissions

The SV-CAP uses 2006 as the baseline year for the inventory of existing GHG emissions in Simi Valley. To create the inventory, the major sources and quantities of GHG emissions were identified and then classified by the City's main land uses. The three land uses are residential, business (non-residential), and city government (municipal) operations. Emissions from each of these categories include aspects of transportation, waste generation, and energy use.

These categories and emission types provide a framework to design programs and actions that specifically target reductions by each emissions source, thereby reducing GHG emissions in the community as a whole. The baseline inventory will serve as a reference point to measure the City's progress towards reducing GHG emissions over time. From the baseline inventory, the SV-CAP estimates 1990 GHG emissions to develop the GHG reduction target, as established by AB 32 and CARB regulations, which is to reduce emissions to levels at or below 1990 GHG emissions by year 2020. Finally, the SV-CAP forecasts the anticipated emissions for 2020 and 2030 based on expected growth in land use as defined by the updated General Plan.

Equations and protocols used to calculate GHGs are included in Appendix B. Calculations of GHGs for the years 1990, 2006, 2020, and 2030 are included in Appendices C through F, and H.

2006 Baseline Emissions

In 2006, approximately 1,186,126 metric tons of CO_2e (equivalent carbon dioxide units, including nitrous oxides and methane) were emitted by Simi Valley land uses, as shown below and in Section 3 of the SV-CAP. A detailed breakdown of 2006 emissions by category is available in Appendix D.

2006 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	16,907
Residential	595,536
Non-Residential	573,683
Total	**1,186,126**

This is the baseline total that will provide a benchmark to measure effectiveness of the GHG reduction measures outlined in the SV-CAP in Section 4, and determine how emissions change over time.

1990 Emissions Target Established by AB 32

In 1990, the total emissions by land use in the city of Simi Valley were approximately 1,206,491 metric tons of CO_2e, as shown in the table below and in Section 3. A detailed breakdown of 1990 emissions by category is available in Appendix C.

1990 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	15,492
Residential	636,441
Non-Residential	554,558
Total	**1,206,491**

An increase in the energy efficiency of buildings and appliances between 1990 and 2006 is reflected in the difference between the 2006 baseline and the 1990 emissions totals. See Tables 3-2 and 3-5 in Section 3 for more details.

2020 Business as Usual Emissions

A business-as-usual (BAU) scenario, or a scenario where operations and development of the City would continue according to 2006 policies, was calculated for the year 2020, based on projected growth in the City as described by the General Plan. The emissions under this BAU scenario would occur without the inclusion of proposed actions in the SV-CAP, or recently adopted sustainability initiatives, described in Chapter 4. In 2020, approximately 1,515,088 metric tons of CO_2e would be emitted within Simi Valley following a business-as-usual (BAU) scenario.

2020 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	20,640
Residential	679,007
Non-Residential	815,441
Total	**1,515,088**

A detailed breakdown of 2020 emissions by category is available in Appendix E. Much of the emissions increase comes from the Energy and Transportation sectors, as shown on Table 3-8. Under AB32 requirements, emissions attributable to Simi Valley must be reduced to levels at or below 1990 GHG emissions by year 2020.

2030 Business as Usual Emissions

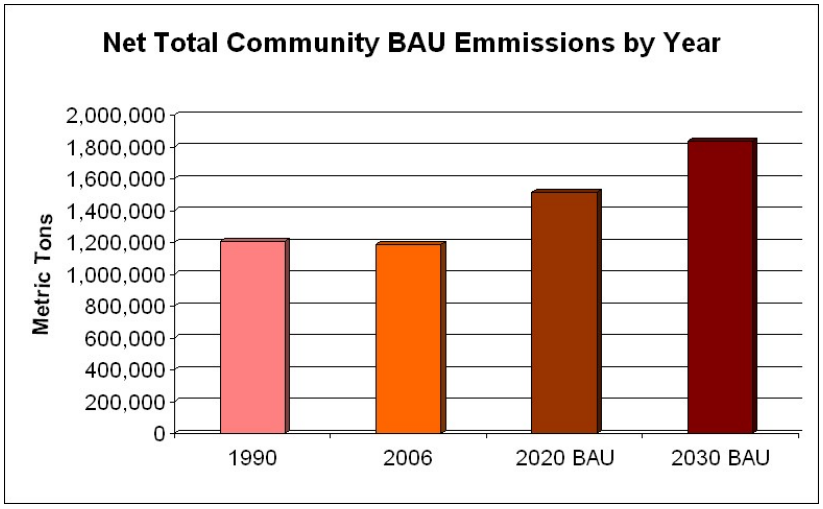
In order to assess whether implementing this plan achieves the City's long-term goals for reducing climate change impacts the SV-CAP includes an analysis of 2030 emissions. The year 2030 was selected because that is the build-out year presented in the Simi Valley General Plan. In 2030, land uses in Simi Valley are projected to emit approximately 1,838,426 metric tons of CO_2e from a BAU standpoint.

2030 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	22,375
Residential	765,032
Non-Residential	1,051,019
Total	**1,838,426**

Simi Valley is anticipated to show an increase of 25 percent in residential land use and 45 percent in non-residential land use between 2006 and 2030. There will be an approximate 34-percent increase in community-wide emissions between 1990 and 2030.

Net Total Emissions				
	Metric tons of CO_2e			
Land Use Category	**1990**	**2006**	**2020 BAU**	**2030 BAU**
Municipal	15,492	16,907	20,640	22,375
Residential	636,441	595,536	679,007	765,032
Non-Residential	554,558	573,683	815,441	1,051,019
Total	**1,206,491**	**1,186,126**	**1,515,088**	**1,838,426**
% Increase from 1990	-	-1.69%	25.58%	52.38%



Emissions Reduction Programs and Regulations

Section 4 of the SV-CAP describes various regulations, programs, and voluntary measures that can be implemented to meet AB 32 targets. First, the State of California has adopted a range of regulations, energy efficiency standards, and renewable energy requirements that will reduce emissions statewide. These statewide actions are identified in the SV-CAP as R1 reduction measures. The R1 measures are included to show how the anticipated reduction strategies implemented at the state level will result in a reduction of greenhouse gas emissions at the City level.

Next, the SV-CAP describes R2 and R3 measures. These measures are implemented at the local level to reduce greenhouse gas emissions from the community as a whole. R2 measures can be quantified to show the value of the reduction from those measures. R3 measures are those measures that cannot be quantified at this time, but are supportive of the R2 measures. Similar to R2 and R3 measures, M2 and M3 measures are incorporated into City government operations to reduce greenhouse gas emissions from municipal buildings and functions. A complete list of assumptions and reductions for the R1, R2, M1, and M2 measures is included in Appendix G.

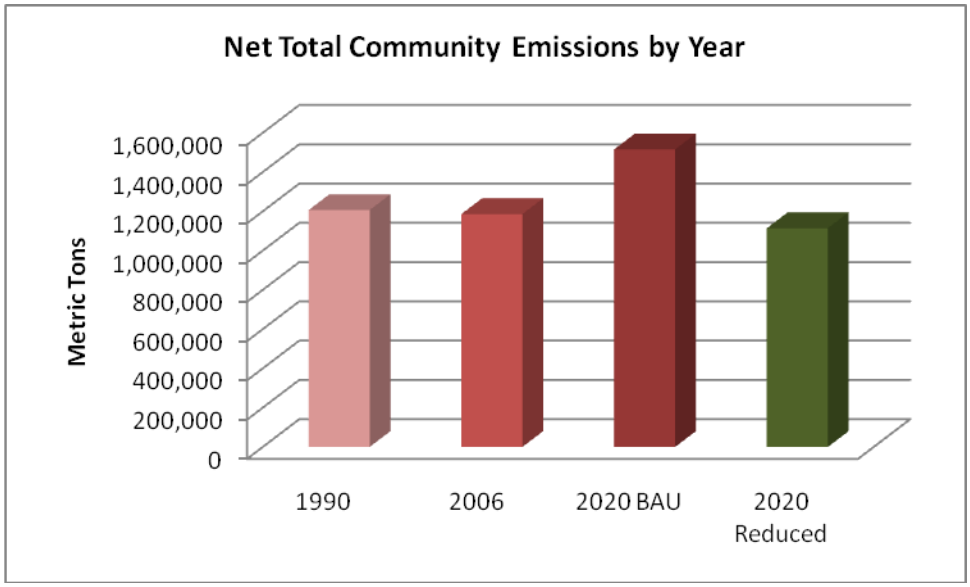
Over the last few years, Simi Valley has implemented several programs that have already begun to reduce the City's GHG emissions and will continue to provide reductions throughout the implementation of this SV-CAP. While these measures are currently in place, they were not in place during the baseline inventory year.

Estimated Emission Reductions

AB 32 requires that Simi Valley reduce GHG emissions to 1990 levels by 2020, and the SV-CAP has been designed to achieve that goal. However, Simi Valley, as with the rest of California, will have to continue to work beyond 2020 to continue to reduce GHG emissions. Successful implementation of the SV-CAP will depend on a commitment by all sections of the community to include climate change as part of their planning and operations. Section 5 of the SV-CAP, coupled with data in Appendix H, provides detailed information of reductions by category and source, as well as the expected reduction percentage from the proposed state and local measures and programs.

Emission reductions estimated for year 2020 were based on the accomplishments likely to be achieved as indicated in the measures detailed in Section 4. With incorporation of the reduction measures, the 2020 emissions from the Simi Valley community are estimated to be 1,113,977 metric tons of CO_2e.

Net Total Emissions by Year				
	Metric tons of CO_2e			
Land Use Category	1990	2006	2020 BAU	2020 Reduced
Municipal	15,492	16,907	20,640	15,521
Residential	636,441	595,536	679,007	496,998
Non-Residential	554,558	573,683	815,441	601,458
Total	**1,206,491**	**1,186,126**	**1,515,088**	**1,113,977**



This Simi Valley Climate Action Plan serves as a guide to help the City pursue work plans with the objectives of conserving resources and reducing GHG emissions. Reduction measures provided herein will ensure that Simi Valley meets the AB 32 reduction target of meeting 1990 levels by 2020. Such programs include strengthening the City's existing ordinances as well as implementing energy efficiency programs, solar rebates, conservation programs, incentives, and ordinances. In some cases, implementation will require the cooperation of other agencies, private businesses, and residents.

The success of these measures will be tracked using indicators and targets such as those described in Section 7 of the SV-CAP. Even with the anticipated growth described by the General Plan, modernization of vehicle fleets, combined with the continued implementation of the

proposed R2, R3, M2, and M3 measures, will reduce Simi Valley's community GHG emissions by approximately 401,111 MT CO_2e.

Implementation Steps

Section 7 describes seven key implementation steps for the SV-CAP to support achievement of the GHG reduction goals for the community at large. Success in meeting City's GHG emission reduction goal will depend on cooperation, innovation, and participation by City residences, businesses, and government entities.

Administration and Staffing: The existing City staff "Green Team" (GRT), combined with the existing interagency Sustainable Simi Valley Committee, and staff members from City departments will implement the SV-CAP, and will be coordinated by the City Manager's Office.

Financing and Budgeting: Regional, state, and federal public sources of funding will be needed along with the involvement of the private sector. The City will create a Climate Finance Plan including material costs and staff resources needed throughout implementation of the plan as well as the financial benefits and cost savings of the SV-CAP.

Timeline and Prioritization: The City will develop the SV-CAP implementation schedule based on cost effectiveness analysis and the Climate Finance Plan. Prioritization will be based on the following factors:

- Cost effectiveness;
- GHG reduction efficiency;
- Availability of funding;
- Level of City control;
- Ease of implementation; and
- Time to implement.

Public Participation: The success of the GHG reduction measures depends on a combination of state and local government efforts, public and private sources of finance, and the voluntary commitment, creativity, and participation of the community at large. The City must strike a balance between development and environmental stewardship to keep the local economy strong and, at the same time, protect the local environment.

Project Review: The CEQA Guidelines require evaluation of projects' GHG emissions and encourage programmatic mitigation strategies that may include reliance on adopted regional

blueprint plans, CAPs, and general plans that meet regional and local GHG emissions targets and that have also undergone CEQA review. The City will implement the reduction measures for new development during the CEQA review, through the use of a City GHG Screening Table document based upon the SV-CAP.

Monitoring and Inventory Updates: The City will implement a monitoring and reporting program to evaluate the effectiveness of reduction measures, adjusting the plan as opportunities arise. The GHG Inventory will be periodically updated toward the 2020 target year, which will then be used to establish a baseline for post-2020 reduction planning.

Beyond 2020: To continue to meet state reduction targets toward 2050, the City will commence planning for the post-2020 period starting in 2017, at the approximate midway point between plan implementation and the reduction target and after development of key ordinances and implementation of cost-effective measures.

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF APPENDICES

APPENDIX

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AB 32	Assembly Bill 32, the California Climate Change Solutions Act of 2006
ARRA	American Recovery & Reinvestment Act
BAU	Business as usual scenario
BTU	British thermal unit
CARB	California Air Resources Board
C	Centigrade
CAA	Clean Air Act
CAAQS	California Ambient Air Quality
CalEPA	California Environmental Protection Agency
CAS	California Climate Adaptation Strategy
CCAT	California Climate Action Team
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CCTP	Climate Change Technology Program
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
C_2F_6	Hexafluoroethane
CF_4	Carbon Tetrafluoride
CH_4	Methane
CIWB	California Integrated Waste Board
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Equivalent Carbon Dioxide
CREB	Clean Renewable Energy Bonds
CSD	Community Services District
CTC	California Transportation Commission
CWSRF	Clean Water State Revolving Funds
EECGB	Energy Efficiency Community Block Grant
EIR	Environmental Impact Report
EMFAC2007	On-Road Emission Factors published by the CARB in 2007
ESCO	Energy Service Company
GCC	Global Climate Change
GHG	Greenhouse Gas
GRT	GHG Reduction Team
GSW	Golden State Water Company
GWP	Global Warming Potential
HFC	Hydrofluorocarbons

HFC-134	Hydrofluorocarbon 134
IEPR	California's Integrated Energy Policy Report
IIP	Interregional Improvement Program (IIP)
IPCC	Intergovernmental Panel on Climate Change
Lbs/year	Pounds per year
LEED	Leadership in Energy and Environmental Design
OPR	California Office of Planning and Research
MMBTU	One million British Thermal Units
MMT	Million Metric Tonne
$MMTCO_2e$	Million Metric Tonne Carbon Dioxide Equivalent
MT	Metric Tonne
MT CO_2e	Metric Tonne Carbon Dioxide Equivalent
MWD	Metropolitan Water District of Southern California
MWh/year	Megawatt hours per year
MWh	Megawatt hours
N_2O	Nitrous Oxide
O3	Ozone
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RIP	Regional Improvement Program
RTIP	Regional Transportation Improvement Program
SCE	Southern California Edison
SCG	Southern California Gas Company
SIP	State Implementation Plan
SF_6	Sulfur Hexafluoride
STIP	State Transportation Improvement Plan
SV-CAP	Simi Valley Climate Action Plan
TDM	Transportation Demand Management
UNFCCC	United Nations Framework Convention on Climate Change
URBEMIS 2007	Urban Emissions Model, version 9.2 published in June 2007
USEPA	United States Environmental Protection Agency
VCAPCD	Ventura County Air Pollution District
VCWWD No.8	Ventura County Waterworks District No. 8
VMT	Vehicle miles traveled

Section 1 Introduction

The City of Simi Valley is committed to providing a more livable, equitable, and economically vibrant community through the reduction of greenhouse gas (GHG) emissions. By using energy more efficiently, harnessing renewable energy to power our buildings, recycling our waste, and enhancing access to sustainable transportation modes, we can keep dollars in our local economy, create new green jobs, and improve community quality of life. These efforts toward reducing GHG emissions must be done in coordination with the City's land use decisions. The foundation of the City's land use decisions is established through the General Plan policies and programs.

The policies and programs of the General Plan are intended to underlie most land use decisions. Preparing, adopting, implementing, and maintaining a general plan serves to:

- Define the community's environmental, social, and economic goals;
- Provide citizens with information about their community and to provide them with opportunities to participate in the planning process;
- Provide residents with opportunities to participate in the planning and decision-making processes of their community;
- Coordinate the community and environmental protection activities among local, regional, state, and federal agencies; and
- Guide in the development of the community.

Chapter 6, the Natural Resources Element of the General Plan, addresses a number of different natural resources within the City that must be managed to maintain their long-term benefits. Among these resources are energy and air quality (which affect GHG emissions). Implementing energy and air quality goals in the General Plan's Natural Resources Element will provide a more livable, equitable, and economically vibrant community, and preserve the attributes of Simi Valley's unique location and quality lifestyle. To achieve these goals, the City has prepared and will implement the Simi Valley Climate Action Plan (SV-CAP). The plan is designed to ensure that the impact of future development on air quality and energy resources is minimized and that land use decisions made by the City and internal operations within the City are consistent with adopted state legislation.

1.1 Purpose

The City of Simi Valley and the community it represents are capable of addressing air quality effects associated with emission sources under the City's jurisdiction. The City's emission reduction efforts will coordinate with state strategies in order to accomplish emission reductions in an efficient and cost effective manner. The City developed the SV-CAP to meet the following state requirements:

- Create a GHG baseline from which to benchmark GHG reductions;
- Provide a plan that is consistent with and complementary to: the GHG emissions reduction efforts being conducted by the State of California through the Global Warming Solutions Act (AB 32); the federal government through the actions of the Environmental Protection Agency; and the global community through the Kyoto Protocol;
- Guide the development, enhancement, and implementation of actions that aggressively reduce GHG emissions; and
- Provide a policy document with specific implementation measures meant to be considered as part of the planning process for future development projects.

1.2 Goals

To fulfill the purposes of the SV-CAP, the City identified the following achievement goals:

- Provide a list of specific actions that will reduce GHG emissions, with the highest priority given to actions that provide the greatest reduction in GHG emissions and benefits to the community at the least cost;
- Reduce emissions attributable to Simi Valley to levels at or below 1990 GHG emissions by year 2020 consistent with the target reductions of AB 32; and
- Establish a qualified reduction plan for which future development within the City can tier and thereby streamline the environmental analysis necessary under the California Environmental Quality Act (CEQA).

1.3 Relationship to the City's General Plan

The General Plan includes a series of linked documents that include: technical reports; a series of land use, hazard, circulation, and resource overlay maps; and the policies of the General Plan. The SV-CAP will implement the General Plan through a focus on the various goals and policies of the General Plan relative to greenhouse gas emissions and by meeting the goals outlined in Section 1.2 above. For convenience and flexibility of use, this SV-CAP document is provided as a stand-alone document.

1.4 Background

The SV-CAP achieves the purpose and goals described above by providing: an analysis of GHG emissions and sources attributable to land uses in the City of Simi Valley; estimates on how those emissions are expected to increase; recommended policies and actions that can reduce GHG emissions to meet state, federal, and international targets; a timeline of implementation; and a defined tracking and reporting mechanism that will measure progress toward the goals.

A brief background about greenhouse gases; the international, federal, state, and local regulatory framework; and the climate change impacts anticipated within the City of Simi Valley will be useful in understanding the measures designed to address climate change. A more complete description of the greenhouse effect, GHG emissions, and general climate change impacts is included as Appendix A of this document.

1.4.1 Greenhouse Gases

Parts of the Earth's atmosphere act as an insulating blanket of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. The 'blanket' is a collection of atmospheric gases called 'greenhouse gases' based on the idea that these gases also trap heat like the glass walls of a greenhouse. These gases, mainly water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and chlorofluorocarbons (CFCs) all act as effective global insulators, reflecting back to earth infrared radiation. Human activities, such as producing electricity and driving internal combustion vehicles, emit these gases into the atmosphere.

The "potency" of each GHG is measured as a combination of the volume of its emissions and its potential to have an effect on climate change. By multiplying the individual gas by its climate change potential, the emissions can be measured in terms of metric tons of CO_2e (MT CO_2e), the metric that is used in the SV-CAP.

1.5 Regulatory Setting

1.5.1 International and Federal

1.5.1.1 United Nations Framework Convention on Climate Change (UNFCC)

The United States is one of 194 current member nations of the UNFCC, which was established in 1994. The initial effort of the UNFCC was the Kyoto Protocol, the first

international agreement to regulate GHG emissions. . The UNFCC has met every year since 1995, further developing work and agreements on climate change. Representatives from 170 countries met in Copenhagen in December 2009 to ratify an updated UNFCCC agreement. The resulting Copenhagen Accord, a voluntary agreement between the United States, China, India, and Brazil, recognizes the need to keep global temperature rise below 2^0 C and obliges signatories to establish measures to reduce greenhouse gas emissions and to prepare strategies to assist poorer countries in adapting to climate change. In December 2010, the UNFCC met in Cancun, Mexico to begin work on replacing the Kyoto Protocol and adopt more formal measures related to the Copenhagen Accords. Each year, additional progress is made toward adoption and implementation of plans and programs that will coordinate an international effort to reduce GHG emissions effectively.

1.5.1.2 United States Environmental Protection Agency (USEPA)

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated by the United States. These programs focus on energy efficiency, renewable energy, control of methane and other non-CO_2 gases, improved agricultural practices, and technologies that will achieve GHG reductions.

In 2009, the USEPA issued a Final Rule for monitoring and reporting of GHG emissions by fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufactures of heavy-duty and off-road vehicles and vehicle engines. This regulation requires annual reporting of emissions by these industries beginning in March 2011.

On May 13, 2010, the USEPA issued a Final Rule that, beginning in 2011, sets a threshold of 75,000 tons per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require Prevention of Significant Deterioration (PSD) and Title V Operating Permits for their processes. On November 10, 2010, the USEPA published a guidance document which instructs state agencies responsible for air pollution permits under the Federal Clean Air Act how to implement federal greenhouse gas reduction requirements when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large point source emitters of GHG emissions.

1.5.2 State

1.5.2.1 California Air Resources Board (CARB)

The California Air Resources Board (CARB), a part of the California EPA (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs. CARB conducts research, sets the California Ambient Air Quality Standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment, and sets fuel specifications to further reduce vehicular emissions.

1.5.2.2 Executive Order S-3-05

Executive Order S-3-05 established the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

1.5.2.3 Assembly Bill 32, The California Global Warming Solutions Act of 2006. (AB32)

In 2006, the California State Legislature adopted AB 32, the California *Global Warming Solutions Act of 2006*. AB 32 focuses on reducing GHGs in California. AB 32 required CARB to adopt rules and regulations that by 2007 would achieve 2020 greenhouse gas emissions equivalent to 1990 statewide levels. CARB determined that the statewide levels of GHG emissions in 1990 were 427 $MMTCO_2e$. CARB then adopted the Climate Change Scoping Plan, which outlines the state's strategy to achieve the 2020 GHG limit set by AB 32. This Scoping Plan is a comprehensive strategy designed to reduce overall greenhouse gas emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health.

Part of California's strategy for achieving GHG reductions under AB 32 include early action greenhouse gas reduction measures that include a low carbon fuel standard; reduction of emissions from non-professional servicing of motor vehicle air conditioning systems; and improved landfill methane capture (CARB 2007).

1.5.2.4 Senate Bill 97 (SB 97)

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. In 2010, the California Office of Administrative Law codified CEQA amendments that provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions, as found in CEQA Guidelines § 15183.5. To streamline analysis, CEQA provides for analysis through compliance with a previously adopted plan or mitigation program under special circumstances.

One of the goals of the SV-CAP is to allow programmatic level review and mitigation of GHG emissions to streamline CEQA review for subsequent development projects that were anticipated by the current General Plan. To accomplish this, the SV-CAP framework is designed to fulfill the requirements identified in CEQA Guidelines § 15183.5.

1.5.2.5 Executive Order S-13-08

Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, provides clear direction for how the state should plan for future climate impacts. The first result is the 2009 CAS report, which summarizes the best known science on climate change impacts in the state to assess vulnerability, and outlines possible solutions that can be implemented within and across state agencies to promote resiliency.

1.5.2.6 California Code of Regulations (CCR) Title 24, Part 6 (California Energy Code)

CCR Title 24, Part 6: *California's Energy Efficiency Standards for Residential and Nonresidential Buildings* were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated triennially to increase the baseline energy efficiency requirements for new building construction. Although not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions, and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

1.5.2.7 California Code of Regulations (CCR) Title 24, Part 11 (CALGreen Code)

CCR Title 24, Part 11: California's Green Building Standard Code (CALGreen) was adopted in 2010 and went into effect January 1, 2011. CALGreen is the first statewide mandatory green

building code and significantly raises the minimum environmental standards for construction of new buildings in California. In addition to requiring more efficient buildings, the mandatory provisions in CALGreen will reduce the use of VOC-emitting materials, strengthen water conservation efforts, and require construction waste recycling.

1.5.3 Regional

The Ventura County Air Pollution Control District (VCAPCD) is the agency principally responsible for comprehensive air pollution control in the South Central Coast Air Basin. In order to provide GHG emission guidance to the local jurisdictions within the Ventura County Air Basin, the VCAPCD has organized a Working Group to develop GHG emission analysis guidance and thresholds. Currently the VCAPCD recommends the use of existing methodologies while it develops a guidance plan.

1.5.4 Local

Simi Valley has adopted an Energy Reach Code, which adopts energy efficiency performance standards that reach higher than is required by Title 24 minimums. As part of the first green building ordinance in Ventura County, Simi Valley received CEC approval for the reach code in 2010. The main focus is on efficiency measures that are simple to achieve and enforce, and have the greatest influence on community sustainability. The Reach Code increases energy efficiency requirements for residential and nonresidential structures beyond Title 24, set at 10 and 15 percent respectively for new construction and substantial remodels.

Section 2 Methodology

2.1 Overview

The methodology to prepare the GHG inventories in the SV-CAP uses generally accepted methods of analysis and incorporates the protocols, methods, and emission factors found in the California Climate Action Registry (CCAR) General Reporting Protocol (version 3.1, January 2009). Following the generally accepted methods of analysis, the SV-CAP GHG emission inventories were divided up into a municipal inventory of GHG emissions attributable to government operations and a community-wide inventory of GHG emissions attributable to all sectors within the community including the municipal government and the residential, commercial, and industrial land uses within the City's jurisdictional authority. Because the municipal government operations are a part of the community-wide GHG emissions inventory, the municipal inventory is a sub-set of the community-wide GHG emissions inventory.

2.1.1 Municipal GHG Emissions Inventory

The municipal inventory of city government operations used the methods found in the Local Government Operations Protocol (version 1.1, May 2010). The Local Government Operations Protocol (LGOP) categorizes GHG emissions into three distinct scopes. The following is a brief description of types of emissions as described in the protocols and how they relate to the development of the SV-CAP.

- **Scope 1 Emissions** include all "direct" municipal sources of GHG emissions including (but not limited to): production of heat or steam in municipally owned or controlled boilers, furnaces, etc; transportation (using corporate or fleet vehicles) of materials, products, and waste, and fugitive emissions (from unintentional leaks of GHGs directly into the atmosphere). Scope 1 emissions also include emissions from landscape equipment and other off-road mobile equipment used in municipal parks, municipally owned or maintained easements, and municipally owned or maintained flood control facilities and open spaces. Scope 1 Emissions from Simi Valley are referred to in the SV-CAP as "direct emissions."

- **Scope 2 Emissions** are a special category of "indirect" emissions and refers only to indirect emissions associated with the consumption of purchased electricity, steam,

heating, or cooling. These are indirect emissions that are a consequence of activities taking place within the organizational boundaries of the local government, but that occur at sources owned or controlled by another entity. For example, although electricity is used in City-owned facilities, the emissions from the electricity occur at power generation facilities outside the City boundaries. In this example, the City reports the emissions from electricity as indirect emissions while the utility that owns the power plant would report the emissions are direct emissions; this distinction is used to avoid double counting. Scope 2 Emissions from Simi Valley are referred to in the SV-CAP as "indirect emissions."

- **Scope 3 Emissions** is an optional reporting category that allows for the treatment of all other "indirect emissions." These include emission sources related to local government operations, but for which local governments do not have financial or operational control. Examples of these Scope 3 emissions include emissions from government-generated solid waste, employees' commutes, and business travel. Although Scope 3 emissions are a consequence of the activities of the local government, they occur from sources that are not owned or controlled by the local government. Because Simi Valley can influence the emissions associated with solid waste disposal by working to decrease the amount of waste generated, these Scope 3 emissions are included in the municipal inventory.

2.1.2 Community-wide GHG Emissions Inventory

Currently, no agency or organization has adopted a protocol for community-wide GHG emission inventories. However, several organizations are in the process of drafting community-wide GHG emission inventory protocols. One draft inventory that is gaining general acceptance is the Association of Environmental Professionals (AEP) White Paper on Community-wide GHG Emission Inventory Protocols (AEP, 2010). The AEP Community-wide GHG Emission Inventory Protocols has been reviewed by the California Air Resources Board and South Coast Air Quality Management District, and has gained general acceptance from these agencies. In addition, the International Council of Local Environmental Initiatives (ICLEI) is reviewing the AEP Community-wide GHG Emission Inventory Protocols in consideration of incorporation into the forthcoming ICLEI Draft Community-wide GHG Emission Protocols expected in 2012. The community-wide emissions inventory of GHG emissions in the SV-CAP uses the methods found in the AEP

Community-wide GHG Emission Inventory Protocols. Similar to the LGOP, the AEP Community-wide GHG Emissions Protocol categorizes GHG emissions into three distinct scopes. The following is a brief description of types of emissions as described in the protocols and how they relate to the development of the SV-CAP.

- **Scope 1 Emissions** include all "direct" municipal, industrial, commercial, and residential sources of GHG emissions including (but not limited to): consumption of natural gas within the community for use in generating heat or steam in boilers, furnaces, hot water heaters, and stoves; emissions from vehicle trips generated within the incorporated community of Simi Valley including the transportation of materials, products, waste, and community members; and fugitive emissions (from unintentional leaks of GHGs directly into the atmosphere). Scope 1 emissions also include emissions from landscape equipment and other off-road mobile equipment used on municipal, commercial, industrial, and residential land uses within the jurisdictional control of the City. Scope 1 Community-wide Emissions from Simi Valley are referred to in the SV-CAP as "direct emissions."

- **Scope 2 Emissions** account for "indirect" sources of GHG emissions from the generation of purchased utilities consumed by the municipal, commercial, industrial, and residential sectors of the City. A purchased utility is defined as one that is bought or otherwise brought into the jurisdictional authority of the local government, but not physically generated in power plants owned and/or operated by the local government. Scope 2 emissions physically occur at locations outside of the jurisdictional boundaries and direct control of the local government and thus are separated from direct emissions reported by the local government owned utility in order to avoid double counting. These indirect emissions are separated from the Scope 3 emissions described below because they typically make up a large portion of the jurisdiction's emissions, and there are many opportunities to reduce electricity consumption through energy efficiency and renewable energy reduction strategies. The Scope 2 Emissions from Simi Valley are referred to in the SV-CAP as "indirect emissions."

- **Scope 3 Emissions** is an optional reporting category that allows for the treatment of all other "indirect emissions." Although Scope 3 emissions are a consequence of the activities of the community, they occur from sources not under the jurisdictional control of the City. Scope 3 Community-wide Emissions from solid waste generated by municipal, commercial, industrial, and residential sectors of the City are included in this inventory. The City does not own the landfill, but is indirectly responsible for emissions resulting from solid waste attributable to the land uses within the City of Simi Valley. These emissions include only that portion of methane emitted by the solid waste generated within the City during decomposition within the landfill.

The analysis relative to the SV-CAP employs both quantitative and qualitative components. The quantitative component is an inventory of the City's GHG emissions, while the qualitative component involves compliance with the emission reduction strategies contained in federal, state, and local legislation.

This SV-CAP includes historic, existing, and projected emission sources within the City with an analysis of GHG emissions and mitigation measures available to reduce impacts.

2.2 GHG Emissions in Simi Valley

The SV-CAP established 2006 as the baseline year for the inventory of existing GHG emissions. This inventory identified and categorized the major sources and quantities of GHG emissions emitted by the City's residents, businesses, and municipal operations. This provides a framework to design programs and actions that specifically target reductions by emissions sources. Programs and actions that have been put in place within the City following the baseline year are described in Section 4. The baseline inventory will also serve as a reference point to measure the City's progress towards reducing GHG emissions over time, and provide documentation for potential emission trading opportunities.

The SV-CAP also estimates 1990 GHG emissions to develop the CAP reduction target as established by AB 32 and CARB regulations to achieve these reductions. Finally, the SV-CAP forecasts the anticipated emissions for 2020 and 2030 based on expected growth in land use as defined by the updated General Plan.

Data sources from various City, regional, and state agencies, as well as other service providers, were used to calculate Simi Valley's total greenhouse gas emissions. The sources include the City Departments of Environmental Services; Public Works; Community Services; the City Attorney's Office; Southern California Edison; the Southern California Gas Company; CARB; Ventura County Air Pollution Control District; California Department of Transportation; Amtrak; the California Department of Motor Vehicles; California Department of Resources Recycling and Recovery; and Waste Management. In cases where specific historical or forecast data was not available, estimates were made by extrapolating from existing data. General estimate calculations and assumptions are compiled in Appendices B through G. All of the contributors to greenhouse gas emissions (kilowatt-hours of electricity generated by fossil fuel combustion in power plants, natural gas in therms, vehicle travel in vehicle miles traveled, and solid waste in tons) are uniformly expressed as tons of CO_2e released into the atmosphere in a given year.

Carbon dioxide (CO_2), primarily from vehicle exhaust and consumption of natural gas for heating, is the major constituent in GHG emissions within the City of Simi Valley. Emissions from methane and nitrous oxide are the other major GHG elements in the City. Methane is directly generated from natural gas and petroleum systems, landfilled waste generation, and wastewater treatment, while nitrous oxide results predominately from motor vehicle use.

2.3 Calculation of GHGs

The GHG calculations by emission source follow the California Climate Action Registry (CCAR) General Reporting Protocol, version 3.1 (January 2009), Local Government Protocol, version 1.1 (May 2010), the Landscape Emissions Protocol, version 1.1 (Climate Action Reserve, March 2010), and CARB's Mandatory GHG Reporting Regulations (Title 17, California Code of Regulations, Sections 95100 et seq.). These protocols are consistent with the methodology and emission factors endorsed by VCAPCD, CARB, and USEPA or current industry standards and emission factors published by USEPA.

Equations used in the calculations of GHGs are included in Appendix B. Calculations of GHGs for 1990, 2006, 2020, and 2030 are included in Appendices C through F, and H. When data was not available for 1990, estimations for this inventory were based on square footage of land use given a 15 percent reduction from existing (2006) values. 2020 data was calculated by estimated from 2006 data using anticipated growth in land use based on the City's General Plan Update.

GHG emissions are typically classified as direct and indirect sources; however, they are not completely independent of each other and may be combined into more encompassing categories. For example, natural gas combustion for heat or power is a direct source, and electricity generation (most often through natural gas combustion in California) is an indirect source, yet they are typically discussed under a heading of "Energy" when policies are put in place to reduce emissions. Therefore, this SV-CAP discusses emissions with respect to the general source categories of Energy, Solid Waste, Landscape Emissions, and Transportation.

In this SV-CAP, business as usual (BAU) refers to continued operations and development of the City with the same policies and regulations that were in effect in 2006, the baseline year. The BAU scenario describes projected GHG emissions in year 2020, if the emissions inventory continued to grow strictly based upon the land use growth projections for the City. Therefore, BAU follows a linear growth pattern with minor changes that would occur with the continued urbanization of the City. The BAU scenario shows a modest reduction in vehicle miles traveled due to the increased density of continued urbanization, which results in the closer proximity of commercial and residential land uses, and promotes the use of alternate modes of transportation.

2.3.1 Energy

2.3.1.1 Electricity: (Scope 2 Emission Source)

CO_2, CH_4, and N_2O are emitted through the use of electricity. Electrical usage in the City for 1990 was based on the 15% growth in land use between 1990 and 2006, while anticipated 2020 electrical data was based on usage in 2006 and the anticipated growth as described in the General Plan Update.

SCE provides electricity from a variety of sources including natural gas, nuclear, large hydroelectric, renewable, and coal. Each of these sources of electricity emits different levels of GHGs. The annual usage in megawatt hours per year (MWh/year) was multiplied by the SCE emission factors appropriate to the inventory year for CO_2, CH_4, and N_2O to determine emissions from these sources.

2.3.1.2 Natural Gas Combustion: (Scope 1 Emission Source)

GHGs are emitted from the combustion of natural gas within the City. The annual natural gas usage for the City in million British Thermal Units (MMBTUs) was multiplied by the respective emissions factors for CO_2, CH_4, and N_2O to determine the emissions from natural gas combustion, typically used for water and space heating. Natural gas usage for 2006 was obtained from Southern California Gas (SCG 2010) and 1990 and 2020 usages were determined as described above.

2.3.1.3 Water Use: (Scope 2 Emission Source)

Electricity is needed to move and treat water. Ventura County Waterworks District Number 8 (VCWWD) and Golden State Water Company (GSWC) provide water to the City of Simi Valley. The main source of water is through the Calleguas Municipal Water District. The Calleguas Municipal Water District imports and distributes water from Metropolitan Water District of Southern California (MWD). Water from MWD arrives via the State Water Project from northern California. Calleguas can also pump water from its Las Posas Well Field. The electricity used to draw water from these wells is included in the electricity consumption of these uses. Water usage data for 1990 and 2006 was provided (VCWWD 2010, GSWC 2010) while 2020 usage was determined as described above.

GHG emissions with respect to water use are determined based on the amount of electricity used to move and treat potable water. Electricity consumed is calculated by multiplying annual gallons of water by the MWh of electricity used to treat and transport the water to the City. Emissions from water use are included in the inventory as part of the electrical demand.

2.3.1.4 Wastewater Treatment: (Scope 2 Emission Source)

The City of Simi Valley Department of Public Works operates the City's sewer system and Water Quality Control Plant. As with potable water, emissions from wastewater are determined based on the electricity needed to pump, treat, and transport the wastewater. Wastewater generation for Simi Valley for 2006 was determined from data from the following sources: California Regional Water Quality Control Board, Ventura County Planning Division, and City of Simi Valley Department of Public Works.

GHG emissions with respect to wastewater generation are determined based on the amount of electricity used to move and treat wastewater. Electricity consumed is calculated by multiplying annual gallons of wastewater by the MWh of electricity used to treat and transport the wastewater from the City. Emissions from wastewater generation are included in the inventory as part of the electrical demand.

2.3.2 Solid Waste Management (Scope 3 Emission Source)

GHG emissions from solid waste management for the City are the sum of emissions generated by transportation to the landfill and the fugitive emissions from decomposition in landfills. Note that the City does not own or operate landfills. Therefore, the municipal inventory only includes Scope 3 emissions associated with the solid waste generated by municipal operations. Similarly, the Community-wide GHG emission inventory only includes emissions associated with solid waste generated by the land uses within incorporated Simi Valley under the jurisdictional control of the City. Estimates of waste generation by residents and businesses in the city in 2006 were provided by the Simi Valley Landfill and Recycling Center (Waste Management, 2009) with 1990 and 2020 generation calculated based on change in land use.

Transportation emissions were based on the annual pounds per year (lbs/year) of total waste disposed in landfills, the density of the waste, the capacity of the hauling trucks, the average number of miles traveled by each truck, and the CO_2, CH_4, and N_2O emissions generated per mile traveled.

Fugitive emissions of methane from the decomposition of solid waste are calculated based on the annual waste generation multiplied by the respective emission factors for waste production for CH_4.

2.3.3 Landscape Maintenance Emissions (Scope 1 Emission Source)

Emissions of CO_2, CH_4, and N_2O are generated by the use of landscape equipment through the combustion of gasoline. CO_2 emissions were determined directly using the CARB approved URBEMIS2007 model. From the modeled CO_2 emissions, the approximate number of gallons of gasoline consumed by landscape equipment use was calculated. This number was then multiplied by emission factors in the General Reporting Protocol, version 3.1 to determine both CH_4 and N_2O emissions.

2.3.4 Transportation:

2.3.4.1 On-Road Vehicles (Scope 1 Emission Source)

Carbon dioxide emissions from vehicles were calculated utilizing EMFAC2007, developed by CARB, for the 1990, existing, and 2020 inventories. Motor vehicle emissions of CH_4 and N_2O were calculated using USEPA emission factors for on-road vehicles based on the total annual mileage driven. Vehicle miles for 1990, 2006 and 2020 were determined based on the data provided in the City-specific traffic study developed for the General Plan Update (Iteris 2010), the number of dwelling units for residential land use types, or the square footage of commercial and industrial land use types.

Section 3 Greenhouse Gas Emissions Inventory

The emissions inventory identifies and categorizes the major sources and quantities of GHGs being produced by City residents, businesses, and municipal operations using the best available data. Using historic emissions and BAU practices as a basis, this SV-CAP includes GHG emissions from the 1990 target year and as predicted for 2020. The Emissions Inventories are presented independently by emissions source and land use category.

In the context of the SV-CAP, land use is divided into three distinct categories: municipal, residential, and non-residential. Municipal land uses are owned and operated by the City and include government buildings, the water treatment plant, the Boys and Girls Club, and the Cultural Arts Center. Residential incorporates all single-family, multi family, and congregate care dwelling units, while the non-residential category encompasses all other uses within the City. Emissions from each land use category include aspects of transportation, waste generation, and energy consumption. Therefore land use, as addressed here, strictly provides an alternative breakdown of the net annual GHG emissions generated within the City.

While municipal emissions are identified here as a land use type, and are analyzed separately, they also contribute a portion of the City's community-wide emissions. Since they are owned and operated by the City, the City has direct control over the types of operation conducted and the extent of reductions applied to these operations. By reducing municipal emissions, the City can lead by example within the community. Details on the various land use categories and how emissions were modeled for these categories are included in Appendix B.

3.1 1990 Emissions Inventory

In 1990, the City of Simi Valley's total annual GHG emissions were approximately 1.2 million metric tons $MMTCO_2e$. The following tables and figures (Table 3-1 thru 3-3 and Figure 3-1 thru Figure 3-3), summarize the 1990 community and municipal emissions by land use and source category. A detailed breakdown of 1990 emissions by category is available in Appendix C.

Table 3-1: 1990 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	15,492
Residential	636,441
Non-Residential	554,558
Total	**1,206,491**

Figure 3-1: 1990 Community Emissions by Land Use Category (MT CO_2e)

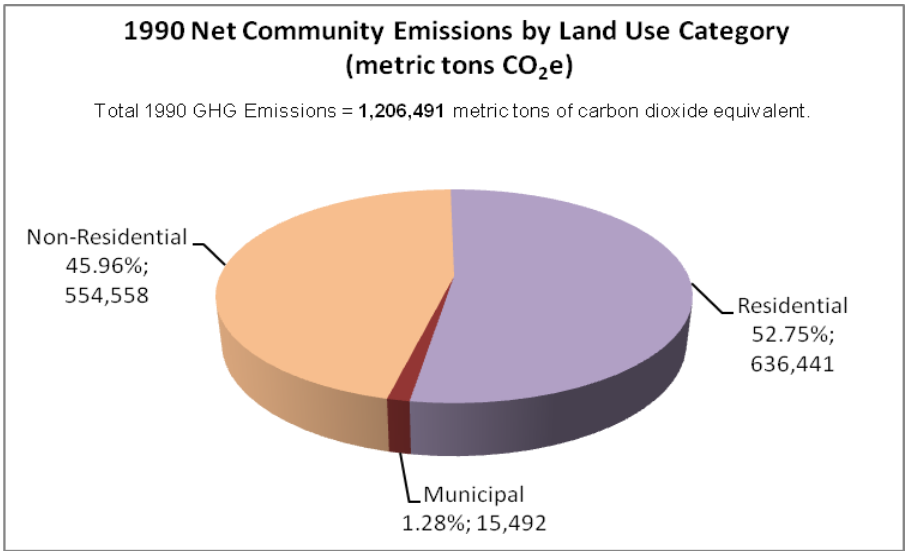


Table 3-2: 1990 Net Total Community Emissions by Emissions Source

Net Total Community Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	370,731
Solid Waste	136,100
Landscape Emissions	378
Transportation	699,283
Total	**1,206,491**

Figure 3-2: 1990 Net Community Emissions by Source (MT CO_2e)

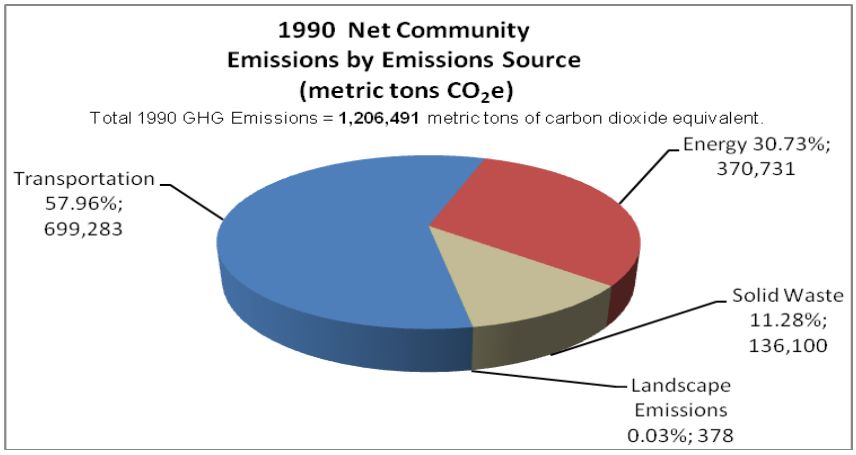
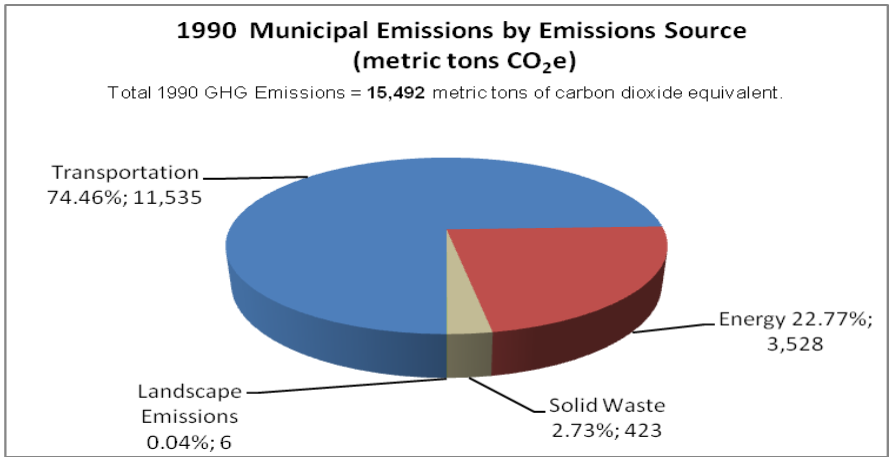


Table 3-3: 1990 Net Municipal Emissions by Source

Net Total Municipal Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	3,528
Solid Waste	423
Landscape Emissions	6
Transportation	11,535
Total	**15,492**

Figure 3-3: 1990 Net Municipal Emissions by Source (MT CO_2e)



3.2 2006 Emissions Inventory

Approximately 1.2 MMTCO$_2$e of GHG were emitted within Simi Valley in 2006. The following tables and figures (Table 3-4 thru 3-6 and Figures 3-4 thru 3-6) summarize 2006 emissions by land use category and source. A detailed breakdown of 2006 emissions by category is available in Appendix D.

Table 3-4: 2006 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	16,907
Residential	595,536
Non-Residential	573,683
Total	**1,186,126**

Figure 3-4: 2006 Community Emissions by Land Use Category (MT CO_2e)

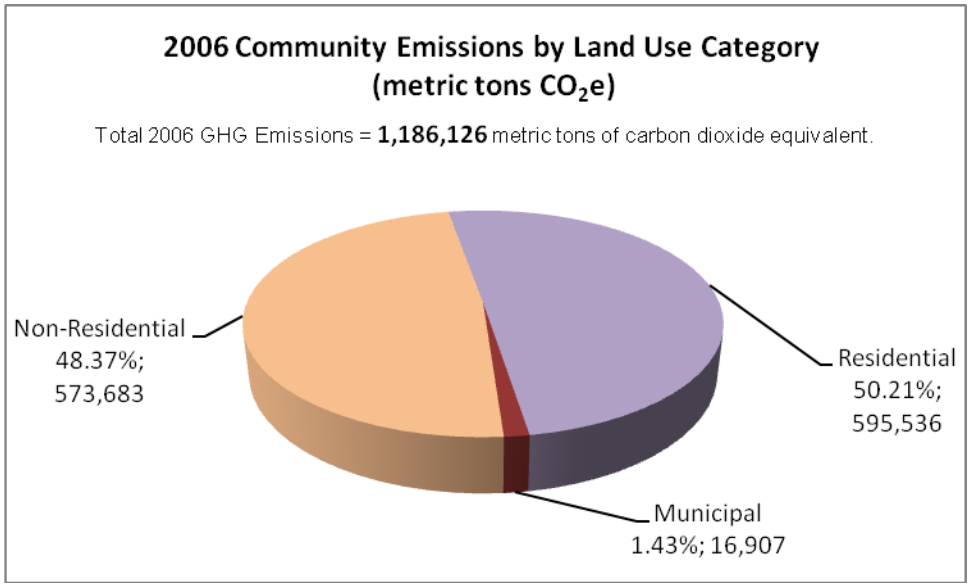


Table 3-5: 2006 Net Total Community Emissions by Emissions Source

Net Total Community Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	355,778
Solid Waste	23,692
Landscape Emissions	429
Transportation	806,227
Total	**1,186,126**

Figure 3-5: 2006 Community Emissions Generated by Source (MT CO_2e)

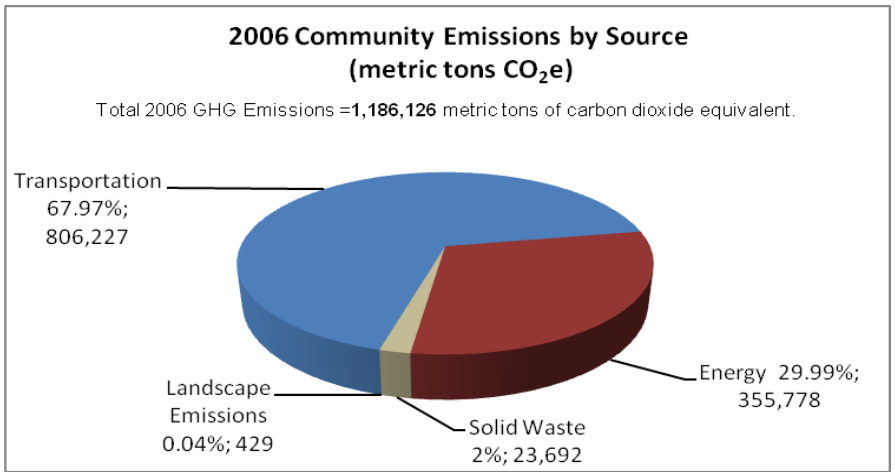
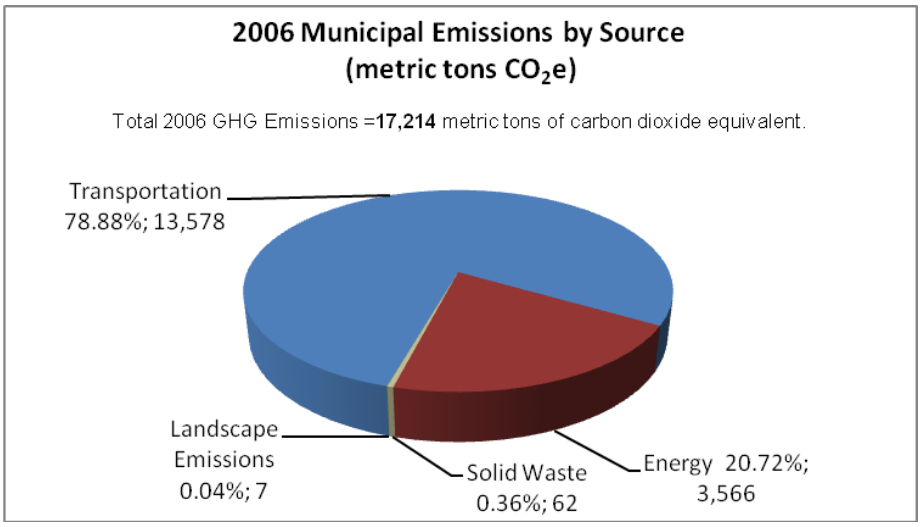


Table 3-6: 2006 Net Municipal Emissions by Emissions Source

Net Total Municipal Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	3,566
Solid Waste	62
Landscape Emissions	7
Transportation	13,578
Total	**16,907**

Figure 3-6: 2006 Municipal Emissions Generated by Source (MT CO_2e)



3.3 2020 Business as Usual (BAU) Emissions Inventory

In 2020, approximately 1.5 $MMTCO_2e$ would be emitted within Simi Valley following a business-as-usual (BAU) scenario. BAU refers to continued operations and development of the City according to 2006 policies, without the inclusion of proposed or recently adopted sustainability initiatives described in Chapter 4. Table 3-7, Table 3-8, Figure 3-7, and Figure 3-8 summarize the net 2020 Citywide emissions of CO_2e as broken down by land use category and source, while Table 3-9 and Figure 3-9 summarize municipal emissions by source. A detailed breakdown of 2020 emissions by category is available in Appendix E.

Table 3-7: 2020 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	20,640
Residential	679,007
Non-Residential	815,441
Total	**1,515,088**

Figure 3-7: 2020 Community Emissions by Land Use Category (MT CO_2e)

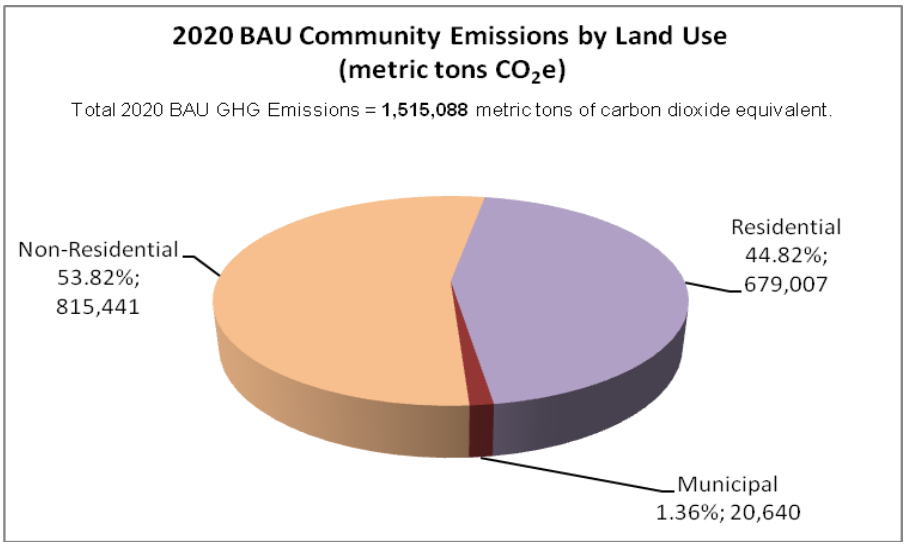


Table 3-8: 2020 BAU Net Total Community Emissions by Source

Net Total Community Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	532,211
Solid Waste	23,853
Landscape Emissions	460
Transportation	958,564
Total	**1,515,088**

Figure 3-8: 2020 BAU Community Emissions Generated by Source (MT CO_2e)

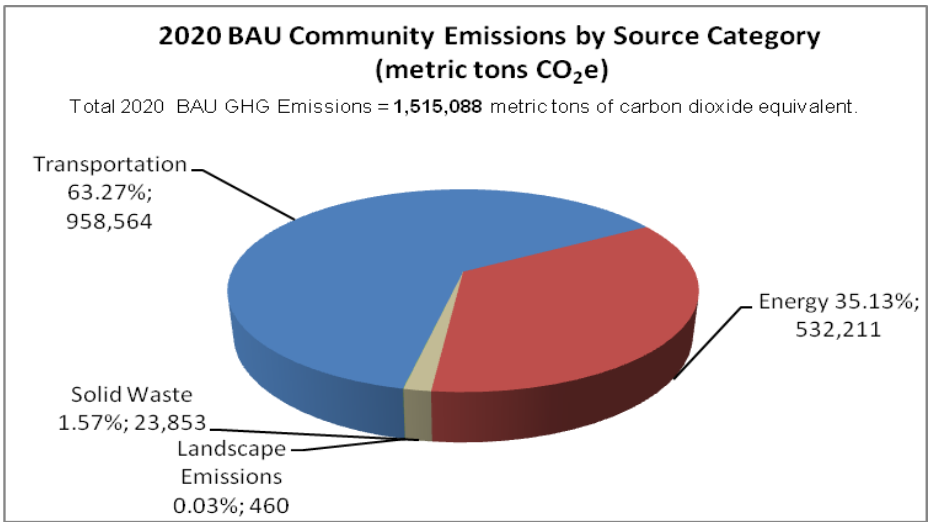
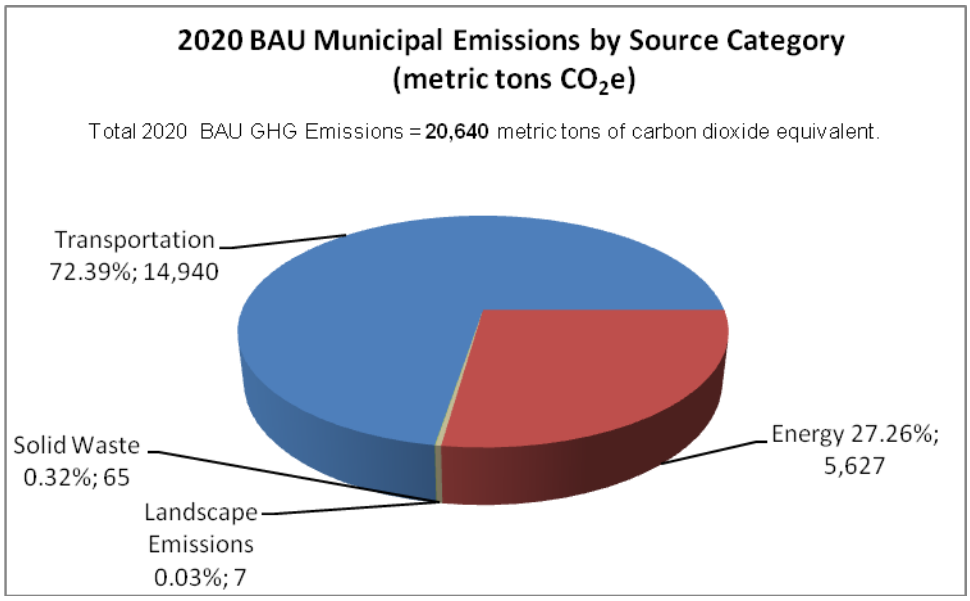


Table 3-9: 2020 BAU Net Total Municipal Emissions by Source

Net Total Municipal Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	5,627
Solid Waste	65
Landscape Emissions	7
Transportation	14,940
Total	**20,640**

Figure 3-9: 2020 BAU Municipal Emissions Generated by Source (MT CO_2e)



3.4 2030 BAU Emissions Inventory

In order to assess whether implementing this plan achieves the City's long-term goals for reducing climate change impacts it must look beyond 2020. The SV-CAP has chosen 2030 as the future year to analyze because that is the build-out year presented in the Simi Valley General Plan Update. In 2030, Simi Valley is projected to emit approximately 1.8 $MMTCO_2e$ from a business-as-usual (BAU) standpoint. Table 3-10, Table 3-11, Figure 3-10, and Figure 3-11 summarize the net 2030 Citywide emissions of CO_2e as broken down by land use category and emissions source, while Table 3-12 and Figure 3-12 summarize municipal emissions by source. A detailed breakdown of 2030 emissions by category is available in Appendix F.

Table 3-10: 2030 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	22,375
Residential	765,032
Non-Residential	1,051,019
Total	**1,838,426**

Figure 3-10: 2030 Community Emissions by Land Use Category (MT CO_2e)

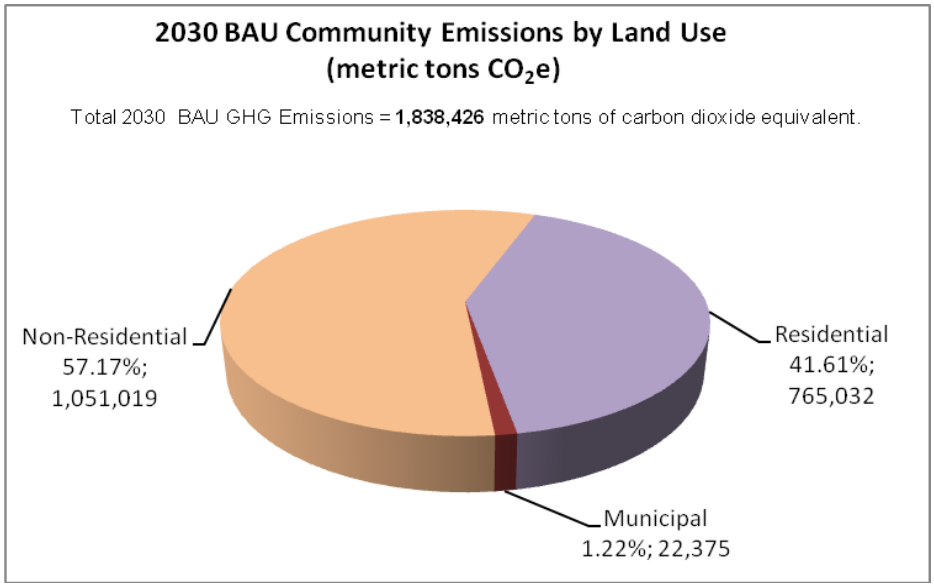


Table 3-11: 2030 BAU Net Total Community Emissions by Source

Net Total Community Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	698,921
Solid Waste	23,973
Landscape Emissions	489
Transportation	1,115,044
Total	**1,838,426**

Figure 3-11:2030 BAU Community Emissions Generated by Source (MT CO_2e)

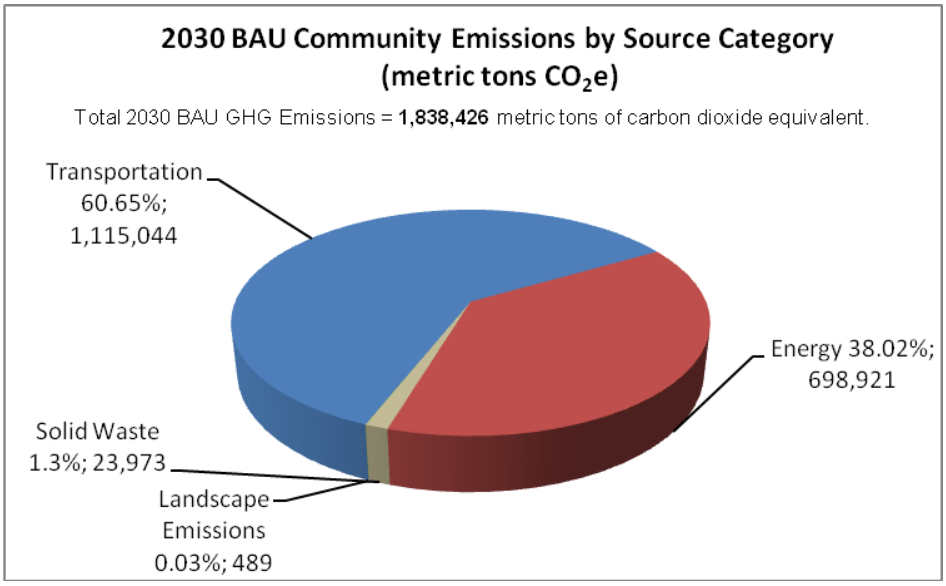
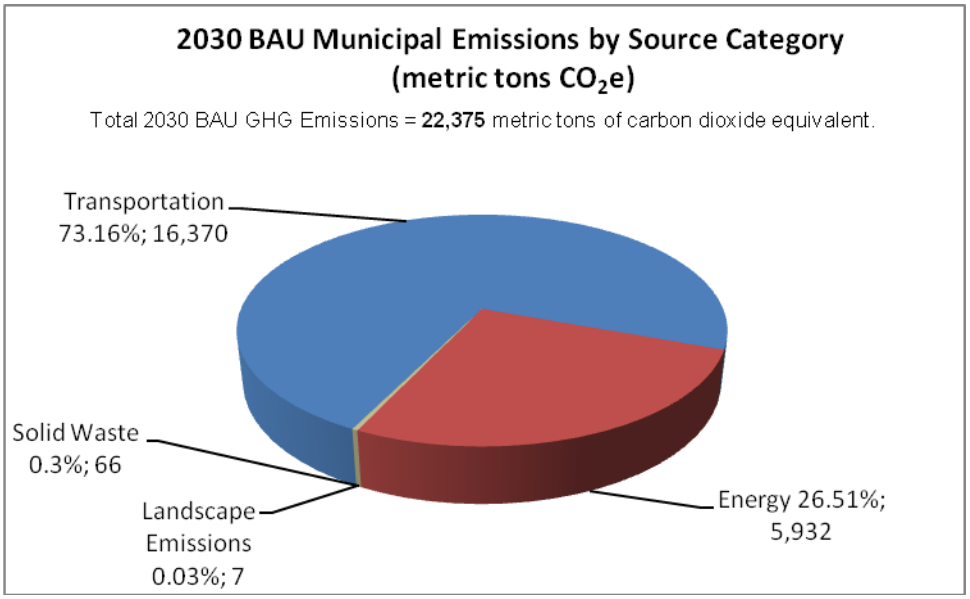


Table 3-12: 2030 BAU Net Total Municipal Emissions by Source

Net Total Municipal Emissions	
Emissions Source	**Metric tons of CO_2e**
Energy	5,932
Solid Waste	66
Landscape Emissions	7
Transportation	16,370
Total	**22,375**

Figure 3-12: 2030 BAU Municipal Emissions Generated by Source (MT CO_2e)



3.5 Net Emissions Comparison by Year

The 1.5 MMTCO_2e of GHG emissions for 2020 is an estimated increase of 328,962 MT CO_2e above 2006 levels and 308,597 MT CO_2e above 1990 levels following BAU projections. GHG emissions for 2030 are estimated at 1.8 MMTCO_2e, which is an increase of 323,338 MT CO_2e, 652,300 MT CO_2e, and 631,935 MT CO_2e respectively over the 2020, 2006, and 1990 levels.

Simi Valley is anticipated to show an increase of 25 percent in residential land use and 45 percent in non-residential land use between 2006 and 2030. A combination of factors including a slow growth rate, projected infill development of the City, and the reduction in methane released from the landfill by using it to generate electricity are the primary reasons that the increase in emissions is modest (approximately 34 percent) between 1990 and 2030. Table 3-13 shows a comparison of the net total BAU emissions by land use category for each of the inventory years. Figures 3-13 and 3-14 compare total community and municipal emissions by year respectively.

Table 3-13: Net Total BAU Community Emissions by Year

Net Total Emissions				
	Metric tons of CO_2e			
Land Use Category	**1990**	**2006**	**2020 BAU**	**2030 BAU**
Municipal	15,492	16,907	20,640	22,375
Residential	636,441	595,536	679,007	765,032
Non-Residential	554,558	573,683	815,441	1,051,019
Total	**1,206,491**	**1,186,126**	**1,515,088**	**1,838,426**
% Increase from 1990	-	-1.69%	25.58%	52.38%

Figure 3-13: Net Total BAU Community Emissions by Year (MT CO_2e)

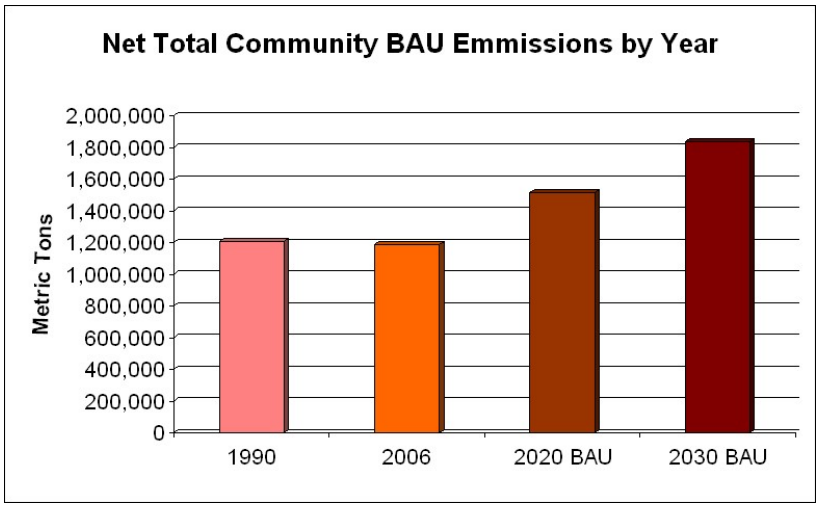
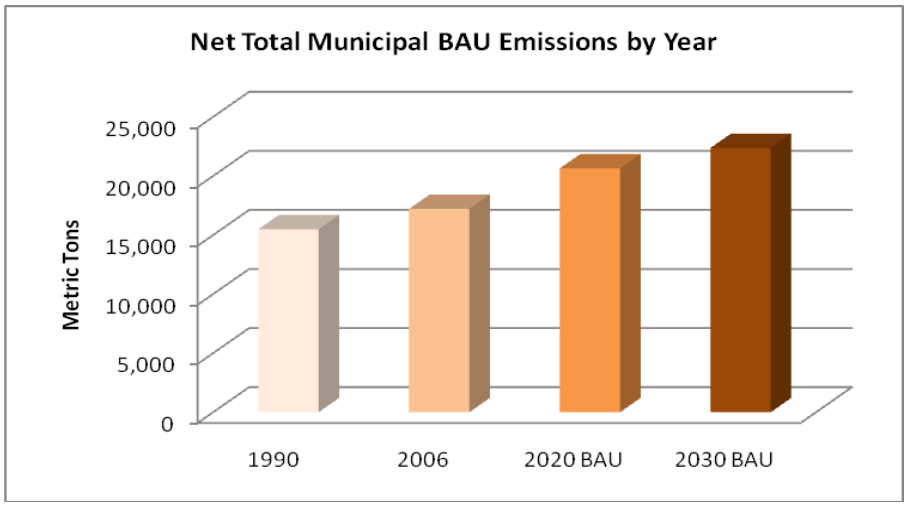


Figure 3-14: Net Total BAU Municipal Emissions by Year (MT CO_2e)



Section 4 GHG Emissions Reduction Programs and Regulations

The State of California has adopted various regulations, energy efficiency standards, and renewable energy requirements that will reduce emissions statewide. The SV-CAP first evaluates the greenhouse gas reductions that will occur within the City as a result of these actions. These will be identified in the SV-CAP as R1 reduction measures. The R1 measures are included to show how the anticipated reduction strategies implemented at the state level will result in a reduction of greenhouse gas emissions at the City level.

R2 and R3 measures are implemented at the City level to reduce greenhouse gas emissions from the community as a whole. R2 measures can be quantified to show the value of the reduction from those measures. R3 measures are those measures that cannot be quantified at this time, but are supportive of the R2 measures. For example, R3-E2: Energy Efficiency Training and Public Education, is a supportive measure that provides education to inform people of the programs, technology, and potential funding available to them to be more energy efficient, and provides the incentives to participate in the voluntary programs shown in R2-E1 through R2-E7. Although R3-E2 cannot be quantified, its implementation provides a level of assurance that the reduction goals specified in the R2 measures will be achieved. A complete list of assumptions and reductions for the R1 and R2 measures is included in Appendix G. Similar to R2 and R3 measures, M2 and M3 measures are incorporated into City government operations to reduce greenhouse gas within the City. Assumptions for these municipal reduction measures are also included in Appendix G.

Over the last few years, Simi Valley has implemented several programs that have already begun to reduce the City's GHG emissions and will continue to provide reductions throughout the implementation of this SV-CAP. While these measures are currently in place, they were not in place during the baseline inventory year.

The following discussion summarizes the existing Simi Valley programs and the proposed reduction measures to be implemented by the City to further reduce GHG emissions. The reduction measures are organized herein by source category (energy, solid waste, landscape emissions, agriculture, transportation, and industrial) then by R1, R2, R3, M2, and M3 measure. The convention to be used for numbering the mitigation measures will be to list the R

designation (R1, R2, R3, M2, or M3), then an abbreviation of the source category, followed by the order number. So, R1-E1 is the first R1 measure within the energy category, R1-E2 is the second measure within the energy category, and so on. The source category abbreviations are as follows: E – energy; W – solid waste; L – Landscape Emissions; T – transportation; and I – industrial.

4.1 Existing Simi Valley Programs

Transportation Demand Management

Chapter 9-39 of the City of Simi Valley Development Code promotes trip reduction and alternative transportation methods (e.g., carpools, vanpools, public transit, bicycles, walking, park-and-ride lots, improvement in the balance between jobs and housing), flexible work hours, telecommuting, and parking management programs to address traffic increases from new development.

Ordinance No. 1142

The Water Conservation Program Ordinance will reduce water consumption within the City of Simi Valley through conservation, effective water supply planning, prevention of waste, and maximized efficient use of water within the City of Simi Valley. The Water Conservation Ordinance is designed to reduce water use in the City to at least 15 percent below the 2009 baseline. The City's website, http://www.simivalley.org/waterconservation, provides additional information on the City's water conservation efforts.

Ordinance 1167

The City is an early adopter of the CALGreen Building Code, which is intended to improve sustainability of the built environment and reduce GHG emissions from new construction. The City's adopting Ordinance 1167 goes further by including a CEC-approved energy reach code, additional landscape water conservation, and increased recycling. As energy efficiency standards increase the City will periodically re-evaluate its reach code for feasibility. The City's website at http://www.simivalley.org/LiveGreen provides additional information on the City's green building efforts.

4.2 Energy

4.2.1 R1 Energy Reduction Measures

The following list of R1 building energy efficiency-related measures are those measures identified in the AB 32 Scoping Plan that will result in emission reductions within the City.

R1-E1: Renewable Portfolio Standard for Building Energy Use

The state's Renewable Portfolio Standard (RPS) has an initial goal of 20 percent renewable energy production procurement by utilities by 2010 with an RPS target of 33 percent by the year 2020. SCE, the electric utility serving Simi Valley, has documented 17 percent as of 2009.

R1-E2 and R1-E3: AB 1109 Energy Efficiency Standards for Lighting (Residential and Commercial Indoor and Outdoor Lighting)

The California Energy Commission (CEC) has adopted energy efficiency standards for general purpose lighting. These regulations, combined with other state efforts, will reduce state-wide electricity consumption in the following ways:

- R1-E2: At least 50 percent reduction from 2007 levels for indoor residential lighting by 2018; and
- R1-E3: At least 25 percent reduction from 2007 levels for indoor commercial and outdoor lighting by 2018.

R1-E4: Electricity Energy Efficiency (AB32)

Emission reduction measures associated with electricity energy efficiency activities included in CARB's AB 32 Scoping Plan, which CARB views as crucial to meeting the state-wide 2020 target, will result in additional emissions reductions beyond those in Title 24, Part 6 of the California Code of Regulations; hereinafter referred to as "Title 24 Energy Efficiency Standards." By 2020, this requirement will reduce state-wide emissions in California by approximately 21.3 MMTCO2e, or 17.5 percent of emissions from all electricity generation in the state.

R1-E5: Natural Gas Energy Efficiency (AB32)

Emission reduction measures associated with natural gas energy efficiency activities included in CARB's AB 32 Scoping Plan will result in additional emissions reductions beyond those already accounted for in the Title 24 Energy Efficiency Standards. By 2020, this requirement will reduce emissions from natural gas use in California by approximately 4.3 MMTCO2e, or 6.2 percent of emissions from natural gas combustion.

R1-E6: Increased Combined Heat and Power (AB32)

CARB's AB 32 Scoping Plan suggests that increased combined heat and power systems, which capture "waste heat" produced during power generation for local use, will offset 30,000 GWh state-wide in 2020. By 2020, this requirement will reduce emissions in California by approximately 6.7 $MMTCO_2e$, representing 7.6 percent of emissions from all power generation in the state.

R1-E7: Industrial Efficiency Measures (AB32)

Reduction measures for industrial building energy emissions are included in CARB's AB 32 Scoping Plan. By 2020, this requirement will reduce emissions in California by approximately 1.0 $MMTCO_2e$, representing 3.9 percent of emissions from all industrial natural gas combustion in the state.

R1-E8: Renewable Portfolio Standard (33 percent by 2020) Related to Water Supply and Conveyance

Reduction measure R1-E1 would increase electricity production from eligible renewable power sources to 33 percent by 2020 through replacing natural gas-fired electricity production with zero GHG-emitting renewable sources of power. By 2020, this requirement will reduce emissions from electricity used for in-state and imported water supply and conveyance in California by approximately 21.3 $MMTCO_2e$, representing 15.2 percent of emissions from water-related electric generation.

4.2.2 R2 Energy Reduction Measures

These R2 measures are building energy efficiency measures the City has incorporated into the SV-CAP to achieve a minimum reduction of 23.66 percent by 2020.

R2-E1: Residential Energy Efficiency Program

This measure involves the adoption of a voluntary incentive program that facilitates energy efficient design for all new residential buildings. The City currently requires new residential buildings to be 10% more efficient than the 2008 Title 24 Part 6 Standards. Measure R2-E1 increases the energy efficiency requirements for new development to 20%, a 10% point increase from the minimum requirements of the City measures. This measure will support the requirements of the existing Green Building Code (§503.2) and enhances General Plan Land Use

Policies LU-8.2 (Sustainable Building Practices), LU-8.4 (Sustainable Land Development Practices), and LU-8.9 (Green Buildings).

The City will provide all developers with a list of potentially feasible GHG reductions through energy efficiency measures and resources prior to design development. The developer will be able to prepare a mitigation report demonstrating which of the proposed reduction measures are feasible as part of the application process. This will assure flexibility in the implementation of this reduction measure.

R2-E2: Residential Renewable Energy Program

General Plan Infrastructure Policy IU-6.5 (Photovoltaic Panels for Private Projects) requires incentives for providing solar energy panels on private development. R2-E2 specifies a voluntary incentive program for the incorporation of renewable energy (such as photovoltaic panels) within new residential developments that would result in a 50% reduction in the new development's projected energy use from the grid. The incentive program should be structured to result in substantial participation by new residential development. This measure would encourage "solar ready" features such as the proper solar orientation (south-facing roof sloped at 20^{O} to 55^{O} from the horizontal), sufficient structural design to accommodate solar panels on the roof, pre-wiring, and space set aside for a solar hot water tank. Solar panels can be distributed on existing rooftops or on new rooftops within the existing electrical grid. The generation of solar power for up to 50 percent of the property's consumption demand would actually decrease the demand for electricity from the grid.

As an alternative, purchased energy offsets (or a combination of incorporated renewables and purchased offsets) equal to 25% of the total projected energy consumption for the development could be considered. See R3-E3 for further details on the financing program.

R2-E3: Residential Retrofit Implementation Program

This measure would initiate a City program that facilitates the incorporation of energy reduction measures for residential buildings undergoing major renovations. The program would encourage residents within the City to undertake energy efficiency retrofits to cut energy consumption in their homes (with a minimum goal of 15%). As with the new development, a menu of options will be provided to assure flexibility in the implementation of this reduction measure. This measure would be supported and enhanced by General Plan Land Use Policies LU-

8.5 (Revitalization of Obsolete and Underused Properties), LU-8.6 (Building Rehabilitation), LU-8.7 (Housing Maintenance), and LU-17.3 (Revitalization).

R2-E4: Residential Renewable Retrofit Program

This measure, in conjunction with Infrastructure Policy IU-6.5 (Photovoltaic Panels for Private Projects), will initiate an incentive program for residents to retrofit their homes with photovoltaic panels so that 50% of all of the home's electrical usage is offset. The California Energy Commission's Solar Initiative has incentives available to homeowners.

R2-E5: Commercial Energy Efficiency Program

This measure involves the adoption of a voluntary incentive program that facilitates energy efficient design for all new non-residential buildings. The City currently requires 15% beyond the Title 24 Standards. Measure R2-E1 increases the energy efficiency requirements for new development to 20%, a 5% point increase from the minimum requirements of the City's Building Code. This measure will support the requirements of the existing Building Code (§503.2) and enhances General Plan Land Use Policies LU-8.2 (Sustainable Building Practices), LU-8.4 (Sustainable Land Development Practices), and LU-8.9 (Green Buildings).

The City will provide all developers with a list of potentially feasible GHG reductions through energy efficiency measures and resources prior to design development. The developer will be able to prepare a mitigation report demonstrating which of the proposed reduction measures are feasible as part of the application process. This will assure flexibility in the implementation of this reduction measure.

R2-E6: Commercial/Industrial Renewable Energy Program

General Plan Infrastructure Policy IU-6.5 (Photovoltaic Panels for Private Projects) requires incentives for providing solar energy panels on private development. This measure specifies a voluntary incentive program for the incorporation of renewable energy (such as photovoltaic panels) within new non-residential developments that would result in a 20% reduction in the new development's projected energy use from the grid. The incentive program should be structured to result in substantial participation by new commercial/industrial development. This measure would encourage "solar ready" features such as the proper solar orientation (south-facing roof sloped at 20^{O} to 55^{O} from the horizontal), sufficient structural design to

accommodate solar panels on the roof, pre-wiring, and space set aside for a solar hot water tank.

As an alternative, purchased energy offsets (or a combination of incorporated renewables and purchased offsets) equal to 20% of the total projected energy consumption for the development could be considered. See R3-E3 for further details on the financing program.

R2-E7: Commercial/Industrial Retrofit Program

This measure would initiate a City program that facilitates the incorporation of energy reduction measures for non-residential buildings undergoing major renovations. The program would encourage business owners within the City to undertake energy efficiency retrofits to cut energy consumption in their businesses (with a minimum goal of 20%). As with the new development, a menu of options will be provided to assure flexibility in the implementation of this reduction measure. This measure would be supported and enhanced by General Plan Land Use Policies LU-8.5 (Revitalization of Obsolete and Underused Properties), LU-8.6 (Building Rehabilitation), and LU-17.3 (Revitalization).

R2-E8: Water Use Reduction Initiative

Emissions associated with electricity consumption for water treatment and transportation are included with the energy reduction measures. The City could adopt a per capita water use reduction goal conforming to Executive Order S-14-08, which mandates a 20% reduction in water use. The City's adoption of a water use reduction goal would increase the existing Metropolitan Water District's goal by 5% points, introduce requirements for new development, and provide cooperative support for water purveyors that are required to implement these reductions for existing developments. The City would also provide internal reduction measures such that City facilities will support this reduction requirement. The following measures represent potential programs that can be incorporated into, and would enhance, City Ordinances 1142 (Water Conservation) and 1167, and General Plan Infrastructure and Natural Resources Policies IU-1.7 (Recycled Water), IU-1.10 (Efficient Irrigation Systems), IU-1.11 (Irrigation System Timing), IU-2.2 (Recycled Water Master Plan), NR-4.4 (Partnerships for Conservation), NR-4.5 (Water Efficient Landscaping), and NR-4.6 (Irrigation Timing) to help attain this reduction goal.

Water Conservation Program:

In addition to the water use reduction methods included in the CALGreen Code and City Ordinance 1167, with the Water Conservation Program, the City would encourage recycling of water used for cooling systems, use of pool covers, and the posting of water conservation signage at all hotels. Under these provisions new developments within Simi Valley are required to adhere to the following water conservation and efficiency measures:

- With the exception of ornamental shade trees, use water-efficient landscapes in all public areas and commercial landscaping, as well as water-efficient turf in parks and other turf-dependent spaces;
- Install the infrastructure to use recycled water for landscape irrigation of large turf areas;
- Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls in accordance with General Plan Infrastructure Policy IU-1.10 (Efficient Irrigation Systems);
- Restrict water methods (prohibit systems that apply water to non-vegetated surfaces) and control runoff. Prohibit businesses from routinely using pressure washers for cleaning driveways, parking lots, sidewalks, and street surfaces; and
- Provide education about water conservation and available programs and incentives.

Increased Recycled Water Use:

Promote the use of municipal wastewater and graywater for irrigation purposes. This measure would be subject to approval of the State Health Department and compliance with Title 22 provisions. This measure would further support General Plan Infrastructure Policy IU-1.7 (Recycled Water), and Land Use Policies LU-8.2 (Sustainable Building Practices) and LU-8.9 (Green Buildings) by implementing the following:

- Inventory of non-potable water uses that could be substituted with recycled or graywater;
- Determination of the feasibility of producing and distributing recycled water for groundwater replenishment;
- Determine the associated energy/GHG tradeoffs for treatment/use vs. out-of-basin water supply usage; and
- Cooperation and coordination with responsible agencies to encourage the use of recycled water where energy tradeoffs are favorable.

4.2.3 R3 Energy Reduction Measures

The following R3 measures enhance the reductions accounted for within the R2 measures through education programs or are measures that will reduce emissions but cannot be quantified.

R3-E1: Energy Efficient Development, and Renewable Energy Deployment Facilitation and Streamlining

This measure would encourage the City to identify and remove any regulatory and procedural barriers to the implementation of green building practices and the incorporation of renewable energy systems. This could include the updating of codes and zoning requirements and guidelines. Additional incentives could include flexibility in building requirements such as height limits or setbacks in exchange for incorporating green building practices or renewable energy systems.

R3-E2: Energy Efficiency Training & Public Education

This measure would strengthen General Plan Policy IU-6.8 (Education) which provides public education and publicity about energy efficiency measures and reduction programs available within the City through a variety of methods including newsletters, brochures, and the City's Website. This measure would provide for the continuance of existing programs including education about rebates and incentives available for residences and businesses as well as providing training in green building materials, techniques, and practices for all plan review and building inspection staff.

R3-E3: Energy Efficiency and Solar Energy Financing

This measure would enhance General Plan Natural Resources Policy NR-8.4 (Solar Homes Partnership) by facilitating the incorporation of innovative, grant funded, or low-interest financing programs for energy efficiency and renewable energy projects for both existing and new developments. This would include financing for heating, ventilation, air conditioning, lighting, water heating equipment, insulation, weatherization, and residential and commercial renewable energy. A few potential options for funding this measure include:

- Establish a Finance District, approve a bond purchase, and administer agreements to allow property owners to implement energy efficiency retrofits or designs and/or install renewable systems. Under this provision repayment could be incorporated as a special tax on the property owner's property tax bill.

- Funding of other incentives to encourage the use of renewable energy sources and energy-efficient equipment and lighting.
- Target local funds to assist affordable housing developers to incorporate renewable energy sources and energy efficiency design features into low-income housing during development or through retrofit programs.

R3-E4: Cross-Jurisdictional Coordination

The City would coordinate with other local governments, special districts, nonprofit, and other organizations to use combined resources to increase energy efficiency and renewable resource development and usage.

4.2.4 M2 Energy Reduction Measures

These M2 measures are building energy efficiency measures the City has incorporated into the SV-CAP to achieve a minimum reduction of 16.03 percent by 2020.

M2-E1: Municipal Energy Efficiency Program

This measure involves the adoption of an incentive program that facilitates energy-efficient design for all new municipal buildings. The City's Building Code currently requires 15% beyond the Title 24 Standards for new non-residential construction including municipal development. This energy efficiency requirement is 5% points greater than the minimum requirements of the City measures, will strengthen the requirements of the existing Building Code, and enhances General Plan Land Use Policies LU-8.2 (Sustainable Building Practices), LU-8.4 (Sustainable Land Development Practices), and LU-8.9 (Green Buildings).

The City will provide developers with a list of feasible GHG reductions applicable to municipal development for increasing energy efficiency prior to design development. This will assure flexibility in the implementation of this reduction measure.

M2-E2: Municipal Renewable Energy Program

General Plan Infrastructure Policy IU-6.6 (Photovoltaic Panels for Public Projects) provides for the generation of some of the City's energy needs through the use of solar energy panels on public, including municipal, development. This measure specifies the incorporation of renewable energy (such as photovoltaic panels) within new municipal developments that would result in a 20% reduction in the new development's projected energy use from the grid.

M2-E3: Municipal Retrofit Program

This measure would initiate a City program that facilitates the incorporation of energy reduction measures for municipal buildings undergoing major renovations to cut energy consumption with a minimum goal of 20%. As with the new development, a menu of options will be provided to assure flexibility in the implementation of this reduction measure.

M2-E4: Water Use Reduction Initiative

This initiative would reduce emissions associated with electricity consumption for water treatment and transportation and therefore are included with the energy reductions. The City has adopted a per capita water use reduction goal in support of Title 24 part 11 which mandates the reduction of water use of 30 percent beyond the Model Water Efficiency Ordinance and 50 percent below the Maximum Applied Water Allowance. The City's adoption of the water use reduction goal introduces requirements for new municipal development and provides cooperative support for water purveyors required to implement these reductions for existing developments.

4.2.5 M3 Municipal Energy Reduction Measures

The following M3 measures enhance the reductions accounted for within the M2 measures through education programs or are measures that will reduce emissions but cannot be quantified.

M3-E1: Energy Efficient Development, and Renewable Energy Deployment Facilitation and Streamlining

This measure is identical to measure R3-E1 and would encourage the City to identify and remove any regulatory and procedural barriers to the implementation of green building practices and the incorporation of renewable energy systems.

R3-E2: Energy Efficiency Training & Public Education

This measure would provide education and publicity for the City's employees about available energy efficiency measures and reduction programs within the City through a variety of methods potentially including newsletters, brochures, and the City's Website.

M3-E3: Cross-Jurisdictional Coordination

The City would coordinate with other local governments, special districts, nonprofit, and other organizations to use combined resources to increase energy efficiency and renewable resource development and usage.

4.2.6 R1 Solid Waste Measure

The state has identified measures that will result in emission reductions within the City.

R1-W1: Waste Measures

The CARB AB 32 Scoping Plan recommends three measures for reducing emissions from Municipal Solid Waste at the state level, including: 1) landfill methane control; 2) increase the efficiency of landfill methane capture; and 3) high recycling/zero waste. Potential reductions associated with these measures are still to be determined. CARB estimates a preliminary one-time cost for adoption of these measures to be approximately $70 per ton of CO_2 reduced. Capital cost is estimated to be approximately $3,440,000, and annual operation cost is estimated to be approximately $706,400 per landfill. Total industry cost estimates are estimated at $110 million over the 23-year analysis period from 2010 to 2033 (CARB 2009).

4.2.7 R2 Solid Waste Measures

The following list of solid waste measures are incorporated into the SV-CAP related to building energy efficiency to achieve an AB 32 compliant reduction target.

R2-W1: City Diversion Program

This measure would implement a Citywide waste diversion goal of diverting 75% (current goal is 50%) of all waste from landfills by 2020. The following is a potential list of waste reduction measures that can be implemented for municipal operations and within the community on an individual development project level which will further strengthen existing waste reduction/diversion programs.

- Provide outreach and education programs for residential, commercial, and industrial land uses in order to further promote existing City diversion programs;
- Increase solid waste collection fees;
- Encourage businesses to adopt a voluntary procurement standard and prioritize those products that have less packaging or are reusable, recyclable, or compostable;
- Support state-level policies that provide incentives for efficient and reduced packaging waste for commercial products;

- Provide waste audits;
- Encourage providing waste diversion opportunities, such as recycling collection containers, at all public events;
- Encourage the diversion of appliances by providing education and information on local recycling and reuse opportunities;
- Encourage the use of recycled building materials and cement substitutes for new developments;
- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard) that meets or exceeds the mandatory 75% currently required by the City;
- Provide interior and exterior storage areas for recyclables and green waste at all buildings;
- Provide adequate recycling containers in public areas, including parks, school grounds, golf courses, and pedestrian zones in areas of mixed-use development; and
- Provide education and publicity about reducing waste and available recycling services.

R2-W2: Construction Diversion Program

Existing City Ordinance 1167 requires a minimum diversion of 75% of construction and demolition waste. This measure provides a 10% point increase in diversion beyond General Plan Infrastructure Policy IU-5.7 (Recycling and Reuse of Construction Wastes) by increasing the diversion rate to 85%.

4.2.8 R3 Solid Waste Measures

The following measures enhance the reductions accounted for within the R2 measures through education programs that help participation and compliance of the R2 measures identified above.

R3-W1: Encourage Increased Efficiency of the Gas to Energy System at Landfills.

This measure, in concurrence with General Plan Policy IU-5.8 (Methane Monitoring and Control), would encourage Waste Management to keep current with upgrades in efficiencies to waste-to-energy systems and to upgrade as feasible when significant increases in conversion efficiencies are available.

R3-W2: Waste Education Program

This measure, in support of General Plan Policies IU-5.6 (Composting and Green Waste Recycling Programs) and IU-5.9 (Educational Programs), would continue to sponsor public educational programs that promote the benefits of solid waste diversion and recycling, including

waste reduction options available at both residential and commercial levels, such as composting, grass cycling, waste prevention, and recycling requirements.

4.2.9 M2 Municipal Solid Waste Measures

The following solid waste measures are incorporated into the SV-CAP related to building energy efficiency to achieve an AB 32-compliant reduction target.

M2-W1: Municipal Diversion Program

This measure would implement a municipal waste diversion goal of diverting 75% (current goal is 50%) of all waste from landfills by 2020. A potential list of waste reduction measures that will further strengthen existing waste reduction/diversion programs is included in R2-W1.

M2-W2: Municipal Construction Diversion Program

Existing City Ordinance 1167 requires a minimum diversion of 75% of construction and demolition waste. This measure provides a 10% point increase in diversion beyond General Plan Infrastructure Policy IU-5.7 (Recycling and Reuse of Construction Wastes) by increasing the diversion rate to 85% for all municipal related construction and demolition activities.

4.2.10 M3 Municipal Solid Waste Measures

The following measure enhances the reductions accounted for within the M2 measures through education programs that help participation and compliance of the M2 measures identified above.

M3-W1: Municipal Waste Education Program

This measure, in support of General Plan Policies IU-5.6 (Composting and Green Waste Recycling Programs) and IU-5.9 (Educational Programs), would introduce educational programs for City employees that promote the benefits of solid waste diversion and recycling, including waste reduction options available such as composting, grass cycling, waste prevention, and recycling requirements.

4.3 Landscape Emission Measures

The following R3/M3 measures are related to landscape strategies that will help reduce greenhouse gas emissions and can be incorporated into development projects without additional cost. These measures strategically place trees and other landscape mechanisms that create shade to reduce the heat island effect within parking lots and adjacent to buildings,

which in turn reduces the temperature of buildings and cars during the summer. Because the M3 measures are identical to the R3 measures, they are not listed separately.

R3-L1/M3-L1: Expand City Tree Planting

Municipal, commercial, and retail development should be encouraged to plant low emission trees, and exceed shading requirements by a minimum of 10%. In support of Natural Resource Policy NR-2.1 (Tree Preservation) and Land Use Policy LU-11.2 (Greenbelts), all future development shall be encouraged to preserve native trees and vegetation to the furthest extent possible.

R3-L2/M3-L2: Heat Island Plan

The implementation of this measure would include expanding the guidelines within General Plan Land Use Policy LU-18.2 (Architectural and Site Design) for cool roofs, cool pavements, and strategically placed shade trees and parking lot shading to amend the Citywide Design Guidelines so that all new developments and major renovations (of 25,000 square feet or more) would be encouraged to reduce 50% of the non-roof impervious site area heat islands. The strategies include:

- Shading (within 5 years of occupancy);
- Paving materials with a Solar Reflective Index (SRI) of at least 29; or
- Covered parking (with shade or cover having an SRI of at least 29).

4.4 Transportation

4.4.1 R1 Transportation Measures

The following list of R1 transportation-related measures are those measures that the State of California has identified in the AB 32 Scoping Plan that will result in emission reductions within the City.

R1-T1: Assembly Bill 1493: Pavley I

Assembly Bill (AB) 1493 (Pavley) required the California Air Resources Board (CARB) to adopt regulations that will reduce GHG from automobiles and light-duty trucks by 30 percent below 2002 levels by the year 2016, effective with 2009 models. By 2020, this requirement will reduce emissions in California by approximately 16.4 $MMTCO_2e$, representing 17.3 percent of emissions from passenger/light-duty vehicles in the state.

R1-T2: LEV III (Assembly Bill 1493: Pavley II)

California committed to further strengthening the AB1493 standards beginning in 2017 to obtain a 45 percent GHG reduction from 2020 model year vehicles. This requirement will reduce emissions in California by approximately 4.0 $MMTCO_2e$, representing 2.5 percent of emissions from passenger/light-duty vehicles in the state.

R1-T3: Executive Order S-1-07 (Low Carbon Fuel Standard)

The Low Carbon Fuel Standard (LCFS) requires a reduction of at least ten (10) percent in the carbon intensity of California's transportation fuels by 2020. By 2020, this requirement will reduce emissions in California by approximately 15 $MMTCO_2e$, representing 6.9 percent of emissions from passenger/light-duty vehicles in the state.

R1-T4: Tire Pressure Program

The AB 32 early action measure involves actions to ensure that vehicle tire pressure is maintained to manufacturer specifications. By 2020, this requirement will reduce emissions in California by approximately 0.55 $MMTCO_2e$, representing 0.3 percent of emissions from passenger/light-duty vehicles in the state.

R1-T5: Low Rolling Resistance Tires

This created an energy efficiency standard for automobile tires to reduce rolling resistance. By 2020, this requirement will reduce emissions in California by approximately 0.3 $MMTCO_2e$, representing 0.2 percent of emissions from passenger/light-duty vehicles in the state.

R1-T6: Low Friction Engine Oils

This AB 32 early action measure would increase vehicle efficiency by mandating the use of engine oils that meet certain low friction specifications. By 2020, this requirement will reduce emissions in California by approximately 2.8 $MMTCO_2e$, representing 1.7 percent of emissions from passenger light-duty vehicles in the state.

R1-T7: Cool Paints and Reflective Glazing

This AB 32 early action measure is based on measures to reduce the solar heat gain in a vehicle parked in the sun. By 2020, this requirement will reduce emissions in California by approximately 0.89 $MMTCO_2e$, representing 0.6 percent of emissions from passenger/light-duty vehicles in the state.

R1-T8: Goods Movement Efficiency Measures

This AB 32 early action measure targets system wide efficiency improvements in goods movement to achieve GHG reductions from reduced diesel combustion. By 2020, this requirement will reduce emissions in California by approximately 3.5 $MMTCO_2e$, representing 1.6 percent of emissions from all mobile sources (on-road and off-road) in the state.

R1-T9: Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency)

This AB 32 early action measure would increase heavy-duty vehicle (long-haul trucks) efficiency by requiring installation of best available technology and/or CARB approved technology to reduce aerodynamic drag and rolling resistance. By 2020, this requirement will reduce emissions in California by approximately 0.93 $MMTCO_2e$, representing 1.9 percent of emissions from heavy-duty vehicles in the state.

R1-T10: Medium and Heavy-Duty Vehicle Hybridization

The implementation approach for this AB 32 measure is to adopt a regulation and/or incentive program that reduce the GHG emissions of new trucks (parcel delivery trucks and vans, utility trucks, garbage trucks, transit buses, and other vocational work trucks) sold in California by replacing them with hybrids. By 2020, this requirement will reduce emissions in California by approximately 0.5 $MMTCO_2e$, representing 0.2 percent of emissions from all on-road mobile sources in the state. This reduction is also equivalent to a 1.0 percent reduction of emissions from all heavy-duty trucks in the state.

4.4.2 R2/M2 Transportation Measures

The following list of R2/M2 measures is incorporated into the SV-CAP to achieve an AB 32 compliant reduction target. Because the M2 measures are identical to the R2 measures, they are not listed separately.

R2-T1/M2-T1: Anti-Idling Enforcement

This measure involves the adoption and enforcement of an Anti-Idling Ordinance for heavy-duty diesel trucks, including local delivery trucks and long-haul truck transport within the City. This policy would prohibit idling of on- and off-road heavy duty diesel vehicles for more than 5 minutes. This policy would be implemented by requiring signage at all loading docks and along truck routes informing drivers of the requirement to shut down their trucks after five minutes of idle time at loading docks and parking areas. Variances to the policy would include the necessity to idle while in traffic lanes due to traffic congestion on the roadway and during emergency situations. Employers who own and operate truck fleets would be required to inform their drivers of the anti-idling policy.

R2-T2/M2-T2: Employment Based Trip and VMT Reduction

Implementation of this measure would enhance the current trip reduction ordinance which promotes commuter-choice programs, employer transportation management, guaranteed ride home programs, and commuter assistance and outreach type programs intended to reduce commuter vehicle miles traveled. This measure would require employers with more than 100 employees within the City to establish a trip reduction plan that would incorporate annual employee commute surveys, marketing of commute alternatives, ride matching assistance, and transit information at a minimum. This reduction measure adds to, and enhances, the Simi Valley Transportation Demand Management (TDM) requirement within Simi Valley Municipal Code Section 9-39.020, and General Plan Mobility & Infrastructure Policy M-11.5 (Transportation Demand Management [TDM] Programs).

R2-T3/M2-T3: Land Use-Based Trip and VMT Reduction Policies

The demand for transportation is influenced by the density and geographic distribution of people and places. Whether neighborhoods have sidewalks or bike paths, and whether homes are within walking distance of shops or transit stops, will influence the type and amount of transportation that is utilized. By changing the focus of land use from automobile-centered transportation, a reduction in vehicle miles traveled will occur. Implementation of Goal LU-1 (Growth and Change); Policies LU-1.2 (Development Location), LU-1.3 (Development Priorities), LU-1.4 (Growth Management), LU-3.2 (Citywide Development Pattern), and LU-8.4 (Sustainable Land Development Practices); Goal LU-19 (Mixed-Use Villages); Policies LU-24.1 (Mixed-Use Development), LU-24.2 (Transit-Oriented Development), and LU-24-3 (Mountain Gate Mixed-

Use Village); and Mobility Policies M-9.1 (Neighborhood Transportation System), M-11.1 (Transportation Demand Management [TDM]), M-11.4 (Demand Reduction Programs) M-11.5 (Transportation Demand Management [TDM] Programs) will all work together to provide a reduction in VMT for the City.

R2-T4/M2-T4: Preferential Parking

Implementation of this reduction measure would encourage the adoption of a comprehensive parking program for public and private parking lots that facilitate carpooling and alternate transportation. Incentives to encourage carpooling and the use of alternate transportation methods would include:

- Providing reserved preferential parking spaces for car-share, carpool, and ultra-low or zero emission vehicles;
- Provide larger parking spaces that can accommodate vans used for ride-sharing programs and reserve them for vanpools, and include adequate passenger waiting/loading areas;
- Allow shared parking to reduce the number of spaces where feasible. For example, in areas where there are multiple land uses, provide resident restricted parking during nighttime hours (7pm to 7am) and open the parking lot for use by patrons of the surrounding commercial buildings during daytime hours; and
- Provide convenient pedestrian pathways through parking areas.

Implementation of these measures will enhance General Plan Mobility Policies M-10.5 (Parking Provisions), M-10.6 (Public-Private Partnerships), and M-10.7 (Parking and Shared Parking Area) to encourage the implementation of shared and preferred parking for alternate modes of transportation.

R2-T5/M2-T5: System Operations and Traffic Controls

General Plan Mobility and Infrastructure Goals M-5 (Traffic Controls), M-6 (Monitoring and Maintenance), and M-7 (Advanced Technology Systems) support (through the policies associated with those goals) modification of arterial roadways to promote and support multimodal transportation options for automobiles, transit, trucks, bicycles, and pedestrians. These modifications include, but are not limited to, synchronization of signals, improvement of traffic flow, the development of parallel roadways, and support for the extension of freight rail.

R2-T6/M2-T6: Increase the Use of Ridesharing as an Alternative to Single Occupancy Vehicle Use

General Plan Mobility and Infrastructure Goal M-13 (Public Transit) promotes the use of ridesharing throughout the City by strengthening the transportation network within the City. The creation of financing programs for the purchase or lease of vehicles used in employer ridesharing programs, and encouraging community car-sharing through employers, will further enhance the use of these services and support the underlying goal of reducing congestion and providing viable alternatives to automobile use. Further reductions in VMT could be obtained through the creation of rideshare incentives for employees such as gas cards, carpool awards, educational seminars, commuter-choice programs, commuter-tax benefits, guaranteed ride-home programs, commuter assistance and outreach, parking incentives, and the encouragement of telecommuting and compressed work weeks.

R2-T7/M2-T7: Provide a Comprehensive System of Facilities for Non-motorized Transportation

General Plan Mobility and Infrastructure Goal M-12 (Bicycling as a Travel Mode Option) and Land Use Policies LU-18.6 (Bicycle Facilities) and LU-23.5 (Streetscape Improvements) require the City to address bicycle and pedestrian facilities. The goal and policies encourage the creation of bike lanes and walking paths directed to the location of schools; require adequate bicycle parking; provide for incorporation of bicycle and pedestrian facilities in new street and highway plans and street upgrades; and provide for a regional bicycle network that connects Simi Valley to neighboring cities within the region. The establishment of these features and multi-use trails will promote off-street bicycle and pedestrian travel as well.

In addition to these policies, and in accordance with General Plan Land Use Policy LU-20.5 (Bicycle Facilities), the City should encourage the development of bicycle stations, attended parking, and other attended bicycle support facilities at intermodal hubs. Bicycle stations are full-service bicycle facilities that in addition to providing secure, guarded bicycle parking could include other amenities such as “valet” bicycle service, showers, bicycle rentals, or repair services.

R2-T8/MT-T8: Expand Renewable Fuel/Low-Emission Vehicle Use

Implementation of the following would promote the expanded use of renewable fuel and low-emission vehicles:

- Collaboration between local and regional governments and business to foster the increased use of renewable fuels through the siting of new alternative fueling/recharging locations;
- Providing preferential parking for ultra low-, zero- emission, and alternative fuel vehicles;
- Collaboration with energy providers to ensure the availability of necessary facilities and infrastructure to encourage the use of privately owned zero emission vehicles. This can be accomplished by having conveniently located charging and fueling stations for these vehicles;
- Provide incentives for taxicabs to use gas-electric hybrid vehicles or, at a minimum, smaller more fuel-efficient vehicles.

New developments within the City will be required to provide the necessary facilities and infrastructure in all land use types to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations). In addition, a requirement will be established for all new industrial and commercial land uses that requires all forklifts, yard trucks, or vehicles that are predominantly used onsite at non-residential land uses to be electric-powered or powered by biofuels that are produced from waste products, or shall use other technologies that do not rely on direct fossil fuel consumption.

4.4.3 R3/M3 Transportation Measure

The following R3 measure enhances and/or insures the reductions accounted for within the R2 measures through education programs or are measures that will reduce emissions but cannot be quantified. Because the M3 measures are identical to the R3 measures, they are not listed separately.

R3-T1/M3-T1: Diesel Exhaust Emissions Control Measures

Under this reduction measure the City will enhance General Plan Natural Resources Policy NR-9.3 (Improved Technology) and enforce a diesel exhaust emissions control ordinance that extends beyond the idling restrictions in Measure R2-T1 described above. This measure provides support for and will increase the effects of implementation of measure R2-T1. The following emissions control measures shall apply to all land use projects approved by the City and will require the following:

For all business establishments that use or own diesel vehicles or off-road equipment as part of normal business operations:

- Maintain equipment in good working order;
- Post signs to indicate parked vehicles should be turned off;
- Provide electrical connections to power the heating, air conditioning, and refrigeration units where trucks will be parked for deliveries or for extended periods of time;
- Direct industrial and commercial operations within the City to use electrical outlets at loading docks over the use of diesel engines to supply power to transport refrigeration units (TRUs) through mandatory signage at all new commercial and industrial facilities and existing facilities with existing electrical outlets meant for this use. Encourage the installation of electrical outlet retrofits for all existing commercial and industrial buildings that accommodate powering of TRUs on trucks and trailers.

For all construction projects in addition to the measures above:

- Provide temporary traffic controls;
- Provide onsite electricity to eliminate the need for diesel powered generators;
- Minimize the concurrent use of equipment throughout phasing;
- Substitute electric and gasoline-powered equipment for diesel wherever feasible.

R3-T2/M3-T2: Regional Land Use & Transportation Coordination

Implementation of General Plan Mobility and Infrastructure Policies M-2.1 through M-2.5, specifically M-2.2 (Integration of Transportation Systems with the Region), promotes the development and use of transit from within the City to areas outside of the City boundaries. This reduction measure will enhance the requirements in R2-T5 and R2-T6 above.

4.5 Industrial

The following list of R1 industrial related measures are those measures that California has identified in the AB 32 Scoping Plan that will result in emission reductions within the City.

This section describes the methodology used to calculate GHG emission reductions per the existing and proposed national, state, or regional industrial fuel combustion measures that will result in future GHG reductions for the transportation sector and do not require significant City action.

R1-I1: Oil and Gas Extraction Combustion Related GHG Emission Reduction

This AB 32 measure would reduce combustion emissions from oil and gas extraction. By 2020, this requirement will reduce emissions in California by approximately 1.8 $MMTCO_2e$, representing 13 percent of combustion emissions from oil and gas extraction in the state.

R1-I2: Stationary Internal Combustion Engine Electrification

This AB 32 measure would affect owners and operators of industrial and commercial engines over 50 horsepower used as primary power sources by replacing internal combustion engines with electric motors. By 2020, this requirement will reduce emissions in California by approximately 0.3 $MMTCO_2e$, representing 0.5 percent of combustion emissions from industrial sources (non-coal) in the state.

Section 5 Total Estimated Reductions

AB 32 requires that Simi Valley reduce GHG emissions to 1990 levels by 2020, and this SV-CAP has been designed to achieve that goal. However, Simi Valley, as with the rest of California, will have to continue to work beyond 2020 to continue to reduce GHG emissions. Successful implementation of the SV-CAP will depend on a commitment by all sections of the community to include climate change as part of their planning and operations.

5.1 Reduced 2020 Net Total Emissions

In 2020, the City is projected to emit a total of 1.5 $MMTCO_2e$ without the incorporation of reduction measures. With incorporation of the reduction measures the City emissions for 2020 are estimated to be reduced to 1.1 $MMTCO_2e$. Emission reductions estimated for year 2020 were based on the accomplishments likely to be achieved as indicated in the measures detailed in Section 4. A detailed breakdown of reduced 2020 emissions by category is available in Appendix H.

Table 5-1 and Figure 5-1 summarize the net reduced 2020 City emissions of CO_2e as broken down by land use category while Table 5-2, Table 5-3, Figure 5-2, and Figure 5-3 show the reduced emissions by source for community and municipal categories, respectively. Reductions in emissions are attributed to state (R1), community (R2), and municipal (M2) measures. Figure 5-4 shows the contribution in reductions with respect to the R1, R2, and M2 measures.

Table 5-1: Reduced 2020 Net Total Community Emissions by Land Use Category

Net Total Community Emissions	
Land Use Category	**Metric tons of CO_2e**
Municipal	15,521
Residential	496,998
Non-Residential	601,458
Total	**1,113,977**

Figure 5-1: Reduced 2020 Community Emissions by Land Use Category (MT CO_2e)

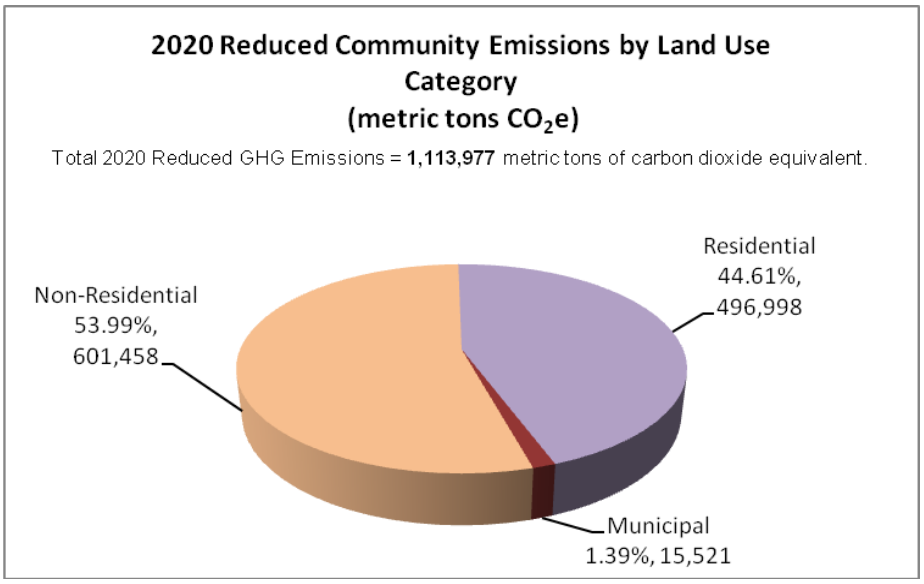


Table 5-2: Reduced 2020 Net Total Community Emissions

Net Total Community Emissions	
Emissions Category	**Metric tons of CO_2e**
Energy	406,315
Solid Waste	18,203
Landscape Emissions	460
Transportation	689,000
Total	**1,113,977**

Figure 5-2: Reduced 2020 Community Emissions by Source (MT CO_2e)

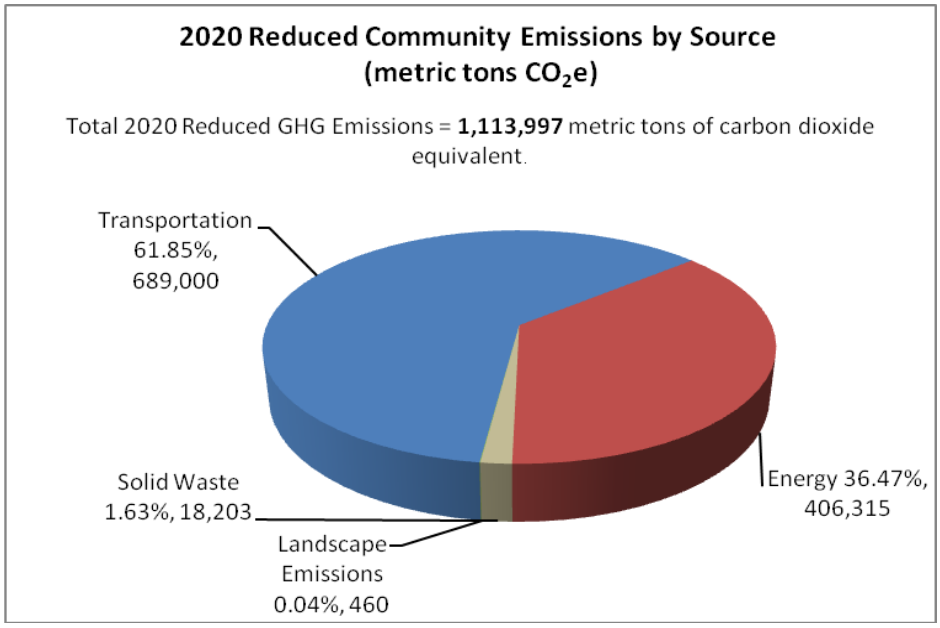


Table 5-3: Reduced 2020 Net Total Municipal Emissions

Net Total Municipal Emissions	
Emissions Category	**Metric tons of CO_2e**
Energy	4,725
Solid Waste	50
Landscape Emissions	7
Transportation	10,739
Total	**15,521**

Figure 5-3: Reduced 2020 Municipal Emissions by Source (MT CO_2e)

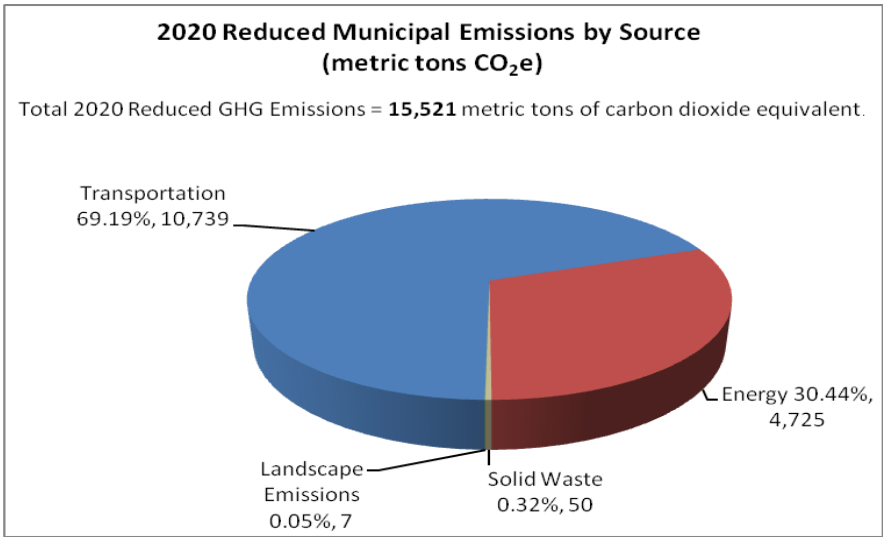
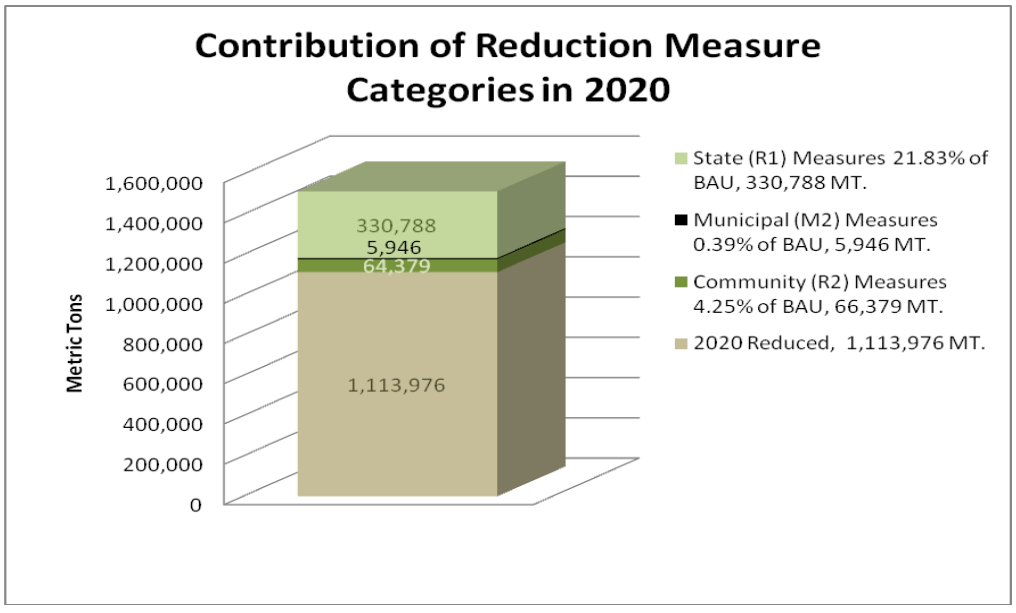


Figure 5-4: Contribution of Mitigation Measure Categories



5.2 Reduced 2030 Net Total Emissions

Beyond AB 32's 2020 target, Executive Order S-0-05 calls for a reduction of 80 percent below 1990 emissions by 2050. For Simi Valley this means reducing emissions to less than 241,298 MT CO_2e. In order for the City to stay on course to meet this goal, the City would need to reduce emissions to below 823,084 MT CO_2e by 2030 even when California's population is anticipated to grow by 12 percent between 2020 and 2030.

While this level of reduction is not currently feasible, increases in technological advances and continued strengthening of existing policies will be the key to providing achieving these future reductions. The following are examples of ways in which future emissions can potentially be reduced at the state or local level:

- Instituting a regional or national cap-and-trade system to further limit emissions from transportation, electrical, natural gas, and industrial sources;
- Achieving a 40 percent fleet-wide passenger vehicle reduction;
- Increasing the use of renewable energy;
- Further reducing the carbon intensity of transportation fuels;
- Increasing energy efficiency and green building efforts; and
- Continuing implementation of land use and transportation policies to further lower VMT and shift travel modes.

Although the full impact of these measures in not known, it is anticipated that technological advances and continued increases in efficiency requirements could provide an additional reduction of 30 percent or more between 2020 and 2030 at the state level.

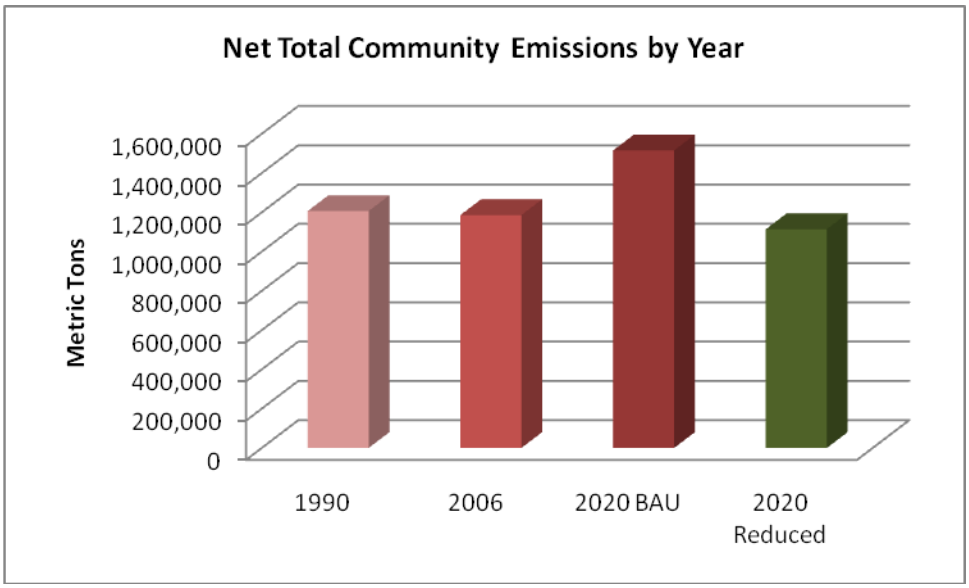
5.3 Net emissions Comparison by Year

The 1,113,977 MT CO_2e of reduced GHG emissions for 2020 is an estimated decrease of 401,112 MT CO_2e from 2020 BAU and a decrease of 92,514 MT CO_2e from 1990 levels. Table 5-4 and Figure 5-5 show a comparison between the 1990, 2006, and 2020 levels, including the 2020 BAU and reduced emissions.

Table 5-4: Net Total Emissions by Year

Net Total Emissions				
	Metric tons of CO_2e			
Land Use Category	1990	2006	2020 BAU	2020 Reduced
Municipal	15,492	16,907	20,640	15,521
Residential	636,441	595,536	679,007	496,998
Non-Residential	554,558	573,683	815,441	601,458
Total	**1,206,491**	**1,186,126**	**1,515,088**	**1,113,977**

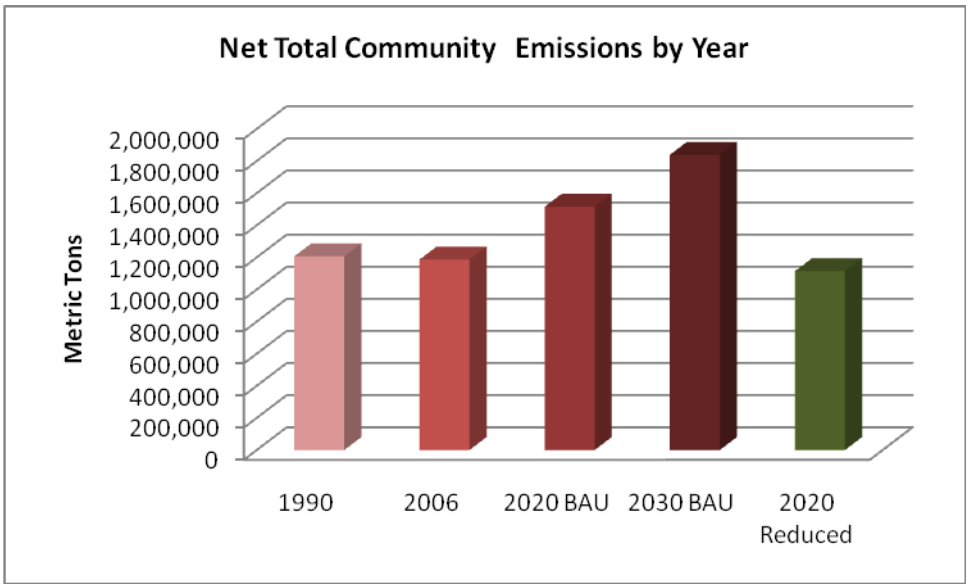
Figure 5-5: Net Total Emissions by Year



Section 6 Conclusions

This Simi Valley Climate Action Plan serves as a guide to help the City pursue work plans with the objectives of conserving resources and reducing GHG emissions. This document also serves as a technical resource for the preparation of the City's current General Plan and other land use related documents that may require evaluation and documentation of GHG emissions. Figure 6-1 shows a comparison between the emission inventories.

Figure 6-1: Total Emissions by Year (MT CO_2e)

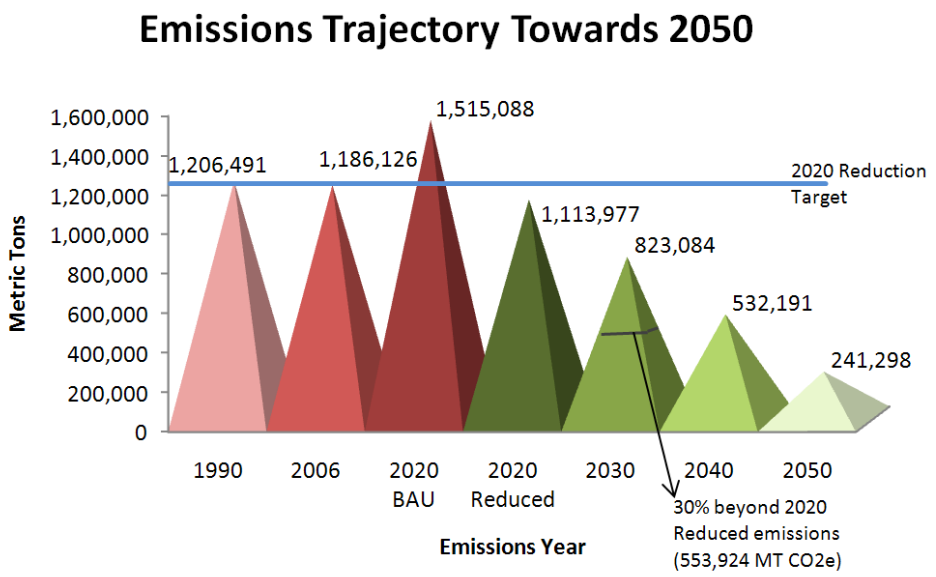


A target has been set to reduce Citywide GHG emissions to 1990 levels by 2020 consistent with the state reduction goals in AB 32. The CARB Scoping Plan provides the state with reduction strategies designed to meet the reduction goal of AB 32. The City has a reduction strategy as described in Section 4 of this SV-CAP that is predicted to meet the state reduction goal. Reduction measures provided herein will ensure that Simi Valley meets the AB 32 reduction target of meeting 1990 levels by 2020. Such programs include strengthening the City's existing ordinances as well as implementing energy efficiency programs, solar rebates, conservation programs, incentives, and ordinances. In some cases, implementation will require the cooperation of other agencies, private businesses, and residents. The success of these measures will be tracked using indicators and targets such as those described in this SV-CAP. Even with the

anticipated growth, the slow growth rate, and modernization of vehicle fleets, combined with the continued implementation of the proposed R2, R3, M2, and M3 measures, will reduce GHG emissions by approximately 401,112 MT CO_2e.

This SV-CAP achieves the short-term 2020 goals. However in order to assess whether implementation of this plan achieves the City's long-term climate change reduction goals, we must look beyond 2020 to see if these reduction measures set Simi Valley on the trajectory needed to do its part in stabilizing the global climate. Figure 6-2 shows what an emissions trajectory might look like, assuming the City follows a linear reduction path from the reduced 2020 emissions target to the 2050 goal proposed to stabilize the climate.

Figure 6-2: Emissions Trajectory Towards 2050



As shown, emissions will need to be reduced by an additional 26.11 percent between 2020 and 2030, and by 70.68 percent between 2030 and 2050. While the measures needed to meet the 2050 goal are too far in the future to define in detail, the SV-CAP shows that by 2030 there is a potential to reduce emissions by an additional 30 percent statewide, which if achieved at the City level would reduce emissions in 2030 to approximately 553,924 MT CO_2e annually, which is significantly below the linearly projected of 823,084 MT CO_2e.

Section 7 Implementation

This section describes implementation steps for the SV-CAP to support achievement of the GHG reduction goals for the community at large. Success in meeting City's GHG emission reduction goal will depend on cooperation, innovation, and participation by City residences, businesses, and government entities with the City in implementing the SV-CAP. This section outlines key steps that the City will follow for the implementation of this SV-CAP.

7.1 STEP 1—Administration and Staffing

The City will utilize the existing City staff "Green Team" (GRT) to support and guide the City's efforts to reduce emissions. The existing interagency Sustainable Simi Valley Committee will review and assist in recommendations for implementation of the SV-CAP, and will be coordinated by the City Manager's Office.

The City GRT, reporting to the City Manager, will be responsible for implementing this SV-CAP, coordinating between City departments, and recommending modifications and changes to the SV-CAP over time. The GRT will include the following departments, and may be expanded as needed to ensure coordinated leadership in plan implementation:

- City Manager's Office will provide administrative guidance and support to the GRT, including benchmarking and updating the CAP.
- Environmental Services Department will provide expertise in land use, building, development of code regulations, and sustainability.
- Community Services Department will provide expertise in evaluating and managing the economic impacts of the plan.
- Public Works Department will provide expertise in the development of municipal reduction measures and the evaluation of technical feasibility of different reduction measures.

7.2 STEP 2—Financing and Budgeting

The Implementation of the SV-CAP will require creative, continuing, and committed financing. Regional, state, and federal public sources of funding will be needed along with the substantial involvement of the private sector. As one of the first priorities for implementation of the plan, the City will create a Climate Finance Plan for all plan aspects. This finance plan will include material costs and staff resources needed throughout implementation of the plan as well as the financial benefits and cost savings of the SV-CAP. The following different financing options will be explored in the Finance Plan:

- State and federal grants and low-interest loans—As described below there are a variety of grant and loan programs that exist in various sectoral areas.
- Support from local businesses, non-profits, and agencies—Opportunities for public/private partnerships (like the existing SCE, local government partnerships) exist to provide cooperation on many aspects of the SV-CAP including energy efficiency retrofits, waste minimization, transit promotion, and education.
- Self-funding and revolving fund programs—Innovative programs to fund residential solar investments.
- Agreements with private investors—Energy service companies (ESCOs) and other private companies can finance up-front investments in energy efficiency and then be reimbursed through revenues from energy savings.

Given that financing is key to implementing many measures, a summary of current and potential funding sources was completed for the different sectors covered in this SV-CAP and is presented below. Whether at the federal, western regional, or state level, it appears likely that there will be some form of a cap and trade system in place within several years. This system, depending on its particular character, is likely to influence energy prices (such as for electricity, natural gas, and vehicle fuels), and may make currently cost-ineffective measures more economically feasible in the medium term and allow the financing of a broader range of plan measures.

7.2.1 Energy Efficiency and Renewable Energy Financing

Federal Tax Credits for Energy Efficiency. On October 3, 2008, President Bush signed into law the "Emergency Economic Stabilization Act of 2008." This bill extended tax credits for energy-efficient home improvements (windows, doors, roofs, insulation, HVAC, and non-solar water heaters) through 2011. The bill also extended tax credits for residential and commercial solar energy systems and fuel cells to 2016.

(See: http://www.energystar.gov/index.cfm?c=products.pr_tax_credits.)

SCE Energy Efficiency / Renewable Energy Incentives

- Online or mail-in Home Energy Efficiency Survey. This 15-minute survey gives helpful energy-saving tips that will also help the environment. The questions and tips are tailored toward residential energy usage.
- Rebate programs for residential use include; lighting, appliances, heating and cooling, multifamily housing, pool, solar leadership and customer generation.
- Energy Centers provide free information, training, and support to make important Energy Management and energy efficiency choices.
- SCE Energy Manager offers online access to usage information and detailed cost analyses business energy use.

- Financial Offerings include zero interest financing and on-Bill financing (where a percentage of the monthly bill is set aside as repayment for the installation of solar power) towards the purchase and installation of qualifying energy efficient equipment for commercial, industrial, and agricultural customers.
- Regulation & Compliance Support - "The Cool Planet Project" assists customers with recent installations or efficiency projects resulting in excess of one million kWh of energy in joining the Climate Registry.
- Solar Leadership helps create a cleaner energy future with innovative solutions that make it possible for you to join the solar movement.
- Self-Generation provides financial incentives for installing self-generation equipment to meet all or a portion of facility's energy needs.
- Specialized Services for Facilities:
    - New Buildings-Receive technical assistance in the design and construction of new energy efficient buildings.
    - Savings by Design: New construction builders and buyers can receive design assistance, owner incentives, and design team incentives.
    - California Advanced Homes - Incentives, design assistance, and technical education and services to encourage home builders to build home that exceed California's Title 24 code standards by at least 15%.
- Full-service solutions are available to qualifying customers to receive assistance in identifying and evaluating energy efficiency opportunities within existing buildings.
    - Retro Commissioning - Receive assistance to improve the bottom line in existing building's operations through specialized services to detect inefficiencies in complex building systems, and to determine optimum operating conditions.
    - Heating Ventilation & Air Conditioning (HVAC) - Lower operating costs and increase equipment life through proper HVAC installation and regular maintenance. Future programs will focus on two key components:
        - A/C Quality Maintenance, and
        - A/C Quality Installation.

Energy Upgrade California Program. The Energy Upgrade California Program offers incentives (between $1,000 and $4,000) for home owners who upgrade their homes in order to reduce home energy leaks and thereby energy use. Energy upgrades under this program provide a more efficient home system by integrating it and making it more energy efficient. (See https://energyupgradeca.org/overview).

Clean Renewable Energy Bonds. Clean renewable energy bonds (CREBs) can be used by certain entities—primarily in the public sector—to finance renewable energy projects. The list of qualifying technologies is generally the same as that used for the federal renewable energy production tax credit. CREBs may be issued by electric cooperatives, government entities

(states, cities, counties, territories, Indian tribal governments, or any political subdivision thereof), and certain lenders. The advantage of CREBs is that they are issued—theoretically—with a zero (0) percent interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. (See http://www.irs.gov/irb/2007-14_IRB/ar17.html.)

AB 811 Financing Districts. AB 811 permits the creation of assessment districts to finance installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to residential, commercial, industrial, or other real property. The use of such a district can remove the up-front cost or up-front financing as an impediment to property owners who would like to install energy efficiency upgrades or renewable energy systems. Financing is repaid through the property tax bill, and repayment obligations remain with the property when it is sold to a new owner.

7.2.2 Transportation Financing

Regional Improvement Program (RIP). The Regional Improvement Program (RIP) is funded from 75 percent of the funds made available for transportation capital improvement projects under the State Transportation Improvement Program (STIP). This program targets urban projects that are needed to improve transportation within the region. The Ventura County Transportation Commission (VCTC) recommends the selection of these projects to the California Transportation Commission (CTC). Projects can include state highway improvements, local roads, public transit, intercity rail, grade separations, and more.

Interregional Improvement Program (IIP). The Interregional Improvement Program (IIP) is funded from 25 percent of the funds made available for transportation capital improvement projects under the STIP. This program targets projects that are needed to improve interregional movement of people and goods. Caltrans recommends to the CTC the selection of these projects, which can include state highway improvements, intercity passenger rail, mass transit guideways, or grade separation projects. VCTC supports or recommends the most cost-effective projects for implementation.

Regional Transportation Improvement Program. VCTC develops the Regional Transportation Improvement Program (RTIP). The RTIP is a listing of all capital transportation projects proposed over a six-year period for the VCTC region. Projects include highway

improvements, transit, rail and bus facilities, carpool lanes, signal synchronization, intersection improvements, freeway ramps, and other related improvements.

7.2.3 Waste Reduction Financing

EPA Pacific Southwest Region 9 Grant opportunities. Region 9's Solid Waste Program administers a few of EPA's many grant programs. Grant funding is provided to government agencies and non-profit organizations to promote waste reduction and the safe and effective management of solid waste. For more information on current and/or past grant opportunities see http://www.epa.gov/region09/waste/solid/funding.html.

California Department of Resources, Recycling and Recovery (Cal Recycle) Grants and Loans. Cal Recycle offers funding opportunities authorized by legislation to assist public and private entities in the safe and effective management of the waste stream. See http://www.calrecycle.ca.gov/grants/ for more details.

7.2.4 Water Conservation and Treatment Financing

Clean Water State Revolving Funds. CWSRFs fund water quality protection projects for wastewater treatment, nonpoint source pollution control, and watershed and estuary management. As of May 2011, CWSRFs have funded over $74 billion, providing over 24,688 low-interest loans to date. (See http://water.epa.gov/grants_funding/cwf/cwsrf_index.cfm for more details.) As of May 2011 the CWSRF's offer:

- Low Interest Rates, Flexible Terms—Nationally, interest rates for CWSRF loans average well below average market rate. As of May 2011, CWSRF loans averaged .3 percent, compared to market rates that average 5 percent. For a CWSRF program offering this rate, a CWSRF funded project would cost 22 percent less than projects funded at the market rate. CWSRFs can fund 100 percent of the project cost and provide flexible repayment terms up to 20 years.
- Funding for Nonpoint Source Pollution Control and Estuary Protection—CWSRFs provided more than $167 million in 2009 to control pollution from nonpoint sources and for estuary protection.
- Assistance to a Variety of Borrowers—The CWSRF program has assisted a range of borrowers including municipalities, communities of all sizes, farmers, homeowners, small businesses, and nonprofit organizations.
- Partnerships with Other Funding Sources—CWSRFs partner with banks, nonprofits, local governments, and other federal and state agencies to provide the best water quality financing source for their communities.

7.3 STEP 3—Timeline and Prioritization

The City will develop the SV-CAP implementation schedule based on the full cost effectiveness analysis and the Climate Finance Plan. Prioritization will be based on the following factors:

- Cost effectiveness;
- GHG reduction efficiency;
- Availability of funding;
- Level of City control;
- Ease of implementation; and
- Time to implement.

In general consideration of these factors, the following is an outline of key priorities for three (3) phases starting in 2011 through 2020.

- Phase 1 (2013–2015): Development of key ordinances (such as updating the City's Green Building Ordinance, warehouse and big box commercial, solar program, expansion of waste diversion goal to 75 percent, etc.), completion of key planning efforts (e.g., Climate Finance Plan, regional land use/transportation planning); implementation of most cost-effective measures (e.g. energy efficiency retrofits, first tier landfill controls, rideshare/carpool measures, etc.); and support of voluntary efforts.
- Phase 2 (2015–2017): Continued implementation of first tier measures, implementation of second tier measures (expand waste reduction target to 70 percent, new building solar requirements, next level of landfill controls, etc.); and implementation of key planning outcomes from Phase 1 (transit-oriented development, etc.).
- Phase 3 (2017–2020): Continued implementation of first and second tier measures, implementation of third tier of measures (expand waste reduction target to 75 percent, next level of landfill controls, etc.).

Because the goals of this SV-CAP are aggressive, success in meeting the SV-CAP goals depend on some flexibility in the GHG reduction actions. The City is committed to flexibility in implementing the reduction measures and meeting the goals of this SV-CAP. Many of the reduction measures in this Plan may be implemented through a menu of options. The goals of each reduction measure can often be achieved through a variety of means, especially those related to building energy efficiency. For example, the City will develop an energy-efficient design programs (measures R2-E3 and R2-E4). Compliance with the energy-efficient design programs can be achieved through many combinations of actions including (but not limited to): installing energy-efficient appliances, lighting, and HVAC systems; installing solar panels and

solar water heaters; siting and orienting buildings to optimize conditions for natural heating, cooling, and lighting; installing top-quality windows and insulation; and incorporating natural shading, skylights, and reflective surfaces. Table 7-1 presents the potential timeline and phasing schedule for the GHG reduction measures.

Table 7-1: GHG Reduction Measure Timeline and Phasing Schedule

Potential Phasing for the R2 GHG Reduction Measures	
Reduction Measure:	**Phase**
Energy Reduction Measures	
R2-E1: Residential Energy Efficiency Program	1
R2-E2: Residential Renewable Energy Program	2
R2-E3: Residential Retrofit Implementation Program	1, 2, 3
R2-E4: Residential Renewable Retrofit Program	1, 2, 3
R2-E5: Commercial Energy Efficiency Program	2
R2-E6: Commercial/Industrial Renewable Energy Program	2, 3
R2-E7: Commercial/Industrial Retrofit Program	2, 3
R2-E8: Water Use Reduction Initiative	1
Solid Waste	
R2-W1: City Diversion Program	1
R2-W2: Construction Diversion Program	1
Transportation	
R2-T1: Anti-Idling Enforcement	1
R2-T2: Employment Based Trip and VMT Reduction	1
R2-T3: Land Use-Based Trip and VMT Reduction Policies	1
R2-T4: Preferential Parking	1
R2-T5: System Operations and Traffic Controls	2
R2-T6: Increase the Use of Ridesharing as an Alternative to Single Occupancy Vehicle Use	1
R2-T7: Provide a Comprehensive System of Facilities for Non-motorized Transportation	3
R2-T8: Expand Renewable Fuel/Low-Emission Vehicle Use	3

7.4 STEP 4—Public Participation

The citizens and businesses in Simi Valley are integral to the success of GHG reduction efforts. The SV-CAP depends on a combination of state and local government efforts, public and private sources of finance, and the voluntary commitment, creativity, and participation of the community at large. The City must strike a balance between development and environmental

stewardship to keep the local economy strong and, at the same time, protect the local environment. The City will educate stakeholders such as businesses, business groups, residents, developers, and property owners about the SV-CAP and encourage participation in the City's efforts to reduce GHG emissions.

7.5 STEP 5—Project Review

The CEQA Guidelines require evaluation of projects' GHG emissions and encourage programmatic mitigation strategies that may include reliance on adopted regional blueprint plans, CAPs, and general plans that meet regional and local GHG emissions targets and that have also undergone CEQA review. The criteria needed to use adopted plans in evaluating impacts of GHG emissions from subsequent development projects is found in CEQA Guidelines § 15183.5. Once adopted, the SV-CAP fulfills these requirements. The City is responsible for ensuring that new projects conform to these guidelines and meet the goals and requirements outlined in this SV-CAP.

The City will implement the reduction measures for new development during the CEQA review, through the use of a City GHG Screening Table document based upon the SV-CAP. The City GHG Screening Table document will provide guidance for the analysis of development projects and divides projects into two broad categories based upon the CEQA review they are going through. For smaller projects that through mitigation can support a Mitigated Negative Declaration (MND), a screening table will be developed. The screening table will provide a menu of reduction options. If a project can garnish 100 points from the screening table, the mitigated project will implement pertinent reduction measures to meet the reduction goals of the SV-CAP, and a less than significant finding can be made for the project. The menu of options in the screening table is tied to the R2 Measures in the SV-CAP such that 100 points will meet the emission reductions associated with the R2 Measures. This menu allows for maximum flexibility for projects to meet its reduction allocation.

For larger projects that exceed the maximum size by land use in the top tier of the screening table, a more detailed analysis will need to be done. The City GHG Significance Threshold document will describe the methodology of quantifying and analyzing GHG emissions. The analysis for larger projects will need to quantify project generated GHG emissions; compare project design features with the R2 Measures in the SV-CAP and, if required, provide mitigation

such that the project is consistent with all relevant R2 Measures; and quantify the reduced (mitigated) GHG emissions attributable to the project. If a large project is consistent with all the relevant R2 Measures, then a less than significant GHG impact finding can be made for the project. The methodology discussed above and described in more detail in the forthcoming City GHG Significance Threshold document will be consistent with the analysis and quantification methodology used in the SV-CAP.

7.6 STEP 6—Monitoring and Inventorying

The City will create a system for monitoring the implementation of this SV-CAP and adjusting the plan as opportunities arise. As the plan is implemented and as technology changes, the SV-CAP should be revised to take advantage of new and emerging technology. If promising new strategies emerge, the City will evaluate how to incorporate these strategies into the SV-CAP. Further, state and federal action will also result in changes that will influence the level of Simi Valley emissions.

The GHG inventory will be periodically updated in coordination with the three (3) phases noted above: 2012 (to update with the Regional Transportation Plan outputs and Phase 1 progress); 2015 (to review Phase 2 progress, allow for course corrections to keep progress on target for 2020; and to develop post-2020 forecasts for use in planning for after 2020); and 2020 (to establish baseline for post-2020 GHG reduction planning). The City will also implement a monitoring and reporting program to evaluate the effectiveness of reduction measures with regards to progress towards meeting the goals of the SV-CAP.

7.7 STEP 7—Beyond 2020

As described above under the discussion of Reduction Goals, 2020 is only a milestone in GHG reduction planning. Executive Order S-03-05 calls for a reduction of GHG emissions to a level 80 percent below 1990 levels by 2050. Thus, there will be a need to start planning ahead for the post-2020 period. The City will commence planning for the post-2020 period starting in 2017, at the approximate midway point between plan implementation and the reduction target and after development of key ordinances and implementation of cost-effective measures. At that point, the City will have implemented the first two (2) phases of this SV-CAP and will have a better understanding of the effectiveness and efficiency of different reduction strategies and approaches. Further, the state's regulations under AB 32 would have been fully in force since

2012; federal programs and policies for the near term are likely to be well underway; market mechanisms like a cap and trade system are likely to be in force and will be influencing energy and fuel prices; and continuing technological change in the fields of energy efficiency, alternative energy generation, vehicles, fuels, methane capture, and other areas will have occurred. The City will then be able to take the local, regional, state, and federal context into account. Further, starting in 2017 will allow for development of the post-2020 plan so that it can be ready for full implementation, including potential new policies, revisions to the General Plan (as necessary), programs, ordinances, and financing by 2020. The new plan will include a specific target for GHG reductions for 2030, 2040, and 2050. The targets will be consistent with broader state and federal reduction targets and with the scientific understanding of the needed reductions by 2050. The City will adopt the new plan by January 1, 2020.

Section 8 References

Association of Environmental Professionals (AEP) 2007. White Paper: Alternative Approaches to Analyzing Greenhouse Gases and Global Climate Change Impacts in CEQA Documents, June.

AEP 2010. White Paper: Draft Community-wide GHG Emission Protocols, December.

California Air Pollution Control Officers Association (CAPCOA) 2008. White Paper: CEQA and Climate Change, January.

CAPCOA 2010. Quantifying Greenhouse Gas Mitigation Measures, August.

California Air Resources Board (CARB) 2009 CARB *Staff Report: Initial Statement of Reasons for the Proposed Regulation to Reduce Methane Emissions from Municipal Solid Waste Landfills*, May 2009.

CARB 2008. AB-32 Scoping Plan, December.

CARB 2007. Proposed Early Actions to Mitigate Climate Change in California http://www.arb.ca.gov/cc/factsheets/support_ccoverview.pdf, December 20.

CARB 2007b. Staff Report California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, November 16.

CARB 2007c, URBEMIS2007 for Windows Version 9.2.4.

Climate Action Reserve 2010. Landscape Emissions Protocol, Version 1.1, March.

California Climate Action Team (CAT) 2010. The Climate Action Biannual Report, April.

CAT 2006. The California Climate Action Team's Final Report to the Governor and Legislature, March.

California Climate Action Registry (CCAR) 2010. Local Government Protocol, Version 1.1, May.

CCAR 2009. General Reporting Protocol, Version 3.1, January.

California Department of Finance 2009. E-4 Population Estimates, http://www.dof.ca.gov/research/demographic/reports/estimates/e-4_2001-07/, May 2009.

California Department of Water Resources 2008. Managing an Uncertain Future Climate Change Adaptation Strategies for California's Water, October.

California Energy Commission (CEC) 2006. Refining Estimates of Water Related Energy Use in California: CEC-500-2006-118, December.

CEC 2006b. Climate Change and Electricity - Demand In California, http://www.energy.ca.gov/2005publications/CEC-500-2005-201/CEC-500-2005-201-SF.PDF, February.

California Department of Transportation (Caltrans) Headquarters Divisions of Transportation Planning and Research & Innovation 2009. Trip-Generation Rates for Urban Infill, June 15.

California Natural Resources Agency 2009. 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008.

City of Simi Valley 2009. Green Building Title 8 Ordinance 1152 June 15.

Golden State Water Company 2010. Personal communication with Skip Faria, February 11.

Intergovernmental Panel on Climate Change (IPCC) 2004. Sixteen Years of Scientific Assessment in Support of the Climate Convention, http://www.ipcc.ch/about/anniversarybrochure.pdf. December 2004.

IPCC 2001. Climate Change 2001: The Scientific Basis, Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate. http://www.ipcc.ch/pub/reports.htm.

Iteris 2010. Technical Memo, *Simi Valley General Plan Update*, October 13th.

Simi Valley Landfill 2010. Personal communication with Marisela Morales, Operations Specialist, November 2009 and April.

Southern California Edison 2010. Personal communication with Rudy Gonzales Region Manager, January 11.

Union of Concerned Scientists and The Ecological Society of America 1999. Confronting climate change in California.pdf, November.

United States Environmental Protection Agency (USEPA) 2010. 2009. U.S. Greenhouse Gas Inventory Report, Section 6 Agriculture, http://www.epa.gov/climatechange/emissions/downloads09/Agriculture.pdf, accessed February.

USEPA 2010b. PSD and Title V Permitting Guidance for Greenhouse Gases, November.

USEPA 2006. Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks, Third Edition, September.

USEPA 1985. AP-42, Compilation of Air Pollutant Emission Factors, Fourth Edition, September.

Ventura County Waterworks District No.8, 2010. Personal communication with Conrad Lee, January 7.

Waste Management, Inc., 2009. Personal communication with M. Clemente, November 23.