CITY OF SAN DIMAS

ELECTRICAL ENERGY ACTION PLAN

Funded by:
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ELECTRICAL ENERGY ACTION PLAN

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ACKNOWLEDGEMENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

List of Figures

LIST OF ABBREVIATIONS

LIST OF
ABBREVIATIONS

LIST OF ABBREVIATIONS

Abbreviation	Definition
AB	Assembly Bill
ABAU	adjusted business-as-usual
AB 32	Assembly Bill 32, California Global Warming Solutions Act of 2006
AB 811	Assembly Bill 811, Contractual Assessments: Energy Efficiency Improvements
AB 1493	Assembly Bill 1493, Clean Car Fuel Standard, also referred to as Pavley bill
ADC	alternative daily cover
AQMD	Air Quality Management District
ARRA	American Recovery and Reinvestment Act of 2009
BAU	business-as-usual
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEESP	California Long-Term Energy Efficiency Strategic Plan
CEQA	California Environmental Quality Act
CFL	compact fluorescent light
CH_4	methane
CIP	Capital improvement program
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COG	Council of Governments
CNG	Compressed natural gas
CPUC	California Public Utilities Commission
CSI	California Solar Initiative
DR	Demand response
EEAP	Electrical Energy Action Plan
EE	energy efficiency

LIST OF ABBREVIATIONS

Abbreviation	Definition
EECBG	Energy Efficiency and Conservation Block Grant
EECS	Energy Efficiency and Conservation Strategy
EEMIS	Energy Enterprise Management Information System
EENR	Energy, Environment, and Natural Resource Committee (of the San Gabriel Valley Council of Governments)
EIR	environmental impact report
ELP	Energy Leader Partnership
EO S-3-05	Executive Order S-3-05, Greenhouse Gas Emissions Reduction Initiative
ESP	Electric Service Provider
EUC	Energy Upgrade California
FTE	full-time equivalents
GHG	greenhouse gas
GWP	Global Warming Potential
HFC	hydrofluorocarbons
HVAC	heating, ventilation, and air conditioning
iDSM	integrated demand-side management
IOUs	investor-owned utilities
JPA	Joint Powers Authority
kW	kilowatt
kWh	kilowatt-hour
LEED	Leadership in Energy and Environmental Design
LGOP	Local Government Operations Protocol
MFD	multifamily dwelling
MG	million gallons
MPO	metropolitan planning organization
MT	metric ton
$MTCO_2e$	metric ton of carbon dioxide equivalent
N_2O	nitrous oxide
NAICS	North American Industry Classification System

LIST OF ABBREVIATIONS

Abbreviation	Definition
PACE	property-assessed clean energy
PEAS	Personal Energy Action Survey
PFC	perfluorocarbons
PSC	Project Steering Committee
PV	photovoltaic
RCx	retrocommissioning
RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCREC	Southern California Regional Energy Consortium
SF_6	Sulfur hexafluoride
SGVCOG	San Gabriel Valley Council of Governments
SGVEWP	San Gabriel Valley Energy Wise Partnership
SP	service population
TAZ	traffic analysis zones
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency
US GBC	United States Green Building Council
VMT	vehicle miles traveled
VSD	variable speed drives

EXECUTIVE SUMMARY

The City of San Dimas is dedicated to implementing energy efficiency programs and proactively working to reduce greenhouse gas (GHG) emissions. This Electrical Energy Action Plan (EEAP) recognizes the importance of demonstrating the City's commitment to increasing energy efficiency and thereby reducing GHG emissions. The purpose of this EEAP is to identify the City of San Dimas's long-term vision and commitment to achieve energy efficiency in the community and in government operations. Specifically, this EEAP includes the following chapters:

- Introduction (Chapter 1)
- GHG Inventory and Forecast (Chapter 2)
- Electricity Profile (Chapter 3)
- Electricity Energy Efficiency Strategy (Chapter 4)
- Implementation (Chapter 5)
- Conclusion (Chapter 6)

Several appendices, described later in this Executive Summary, provide additional details and information.

EXECUTIVE SUMMARY

Introduction

Chapter 1 provides a brief overview of the purpose and scope of this EEAP and how this Plan was created in partnership with the San Gabriel Valley Council of Governments (SGVCOG) and Southern California Edison (SCE). The City has prepared this Plan not only to follow the guidance of California's Long Term Energy Efficiency Strategic Plan (CEESP) but also to identify a clear path to successfully implementing actions, policies, and goals that will achieve the City's reduction targets.

This project was funded through the technical assistance program of the CEESP, which aims to provide local governments with expertise and resources to achieve energy efficiency at municipal facilities and throughout the community. In 2009, as part of CEESP implementation, the California Public Utilities Commission authorized SCE to use funding from the electricity public goods charge to complete strategic plan activities focused on energy efficiency. SCE is implementing the "Big Bold" strategies of the CEESP, and through this process, SCE awarded funding to the SGVCOG to provide funding and technical support for preparation of Energy Action Plans (see **Figure ES-1**).

Figure ES-1: "Big Bold" Strategies of the CEESP

Greenhouse Gas Inventory and Forecast

The GHG inventory and forecast assesses baseline and forecasts future GHG emissions in order to develop strategies to reduce these emissions. Inventories of GHG emissions from community-wide and municipal operations are described in Chapter 2 and are summarized in **Figure ES-2** and **Table ES-1,** below. A baseline year of 2006 was selected for the inventory and activity data for 2010 community sectors including energy, transportation, waste, community off-road, wastewater, and water were translated into GHG emissions to serve as a common benchmark that will allow for accurate comparison between all cities in the San Gabriel Valley participating in the Energy Action Plan process.

Figure ES-2: Community-Wide GHG Emissions by Sector, 2006

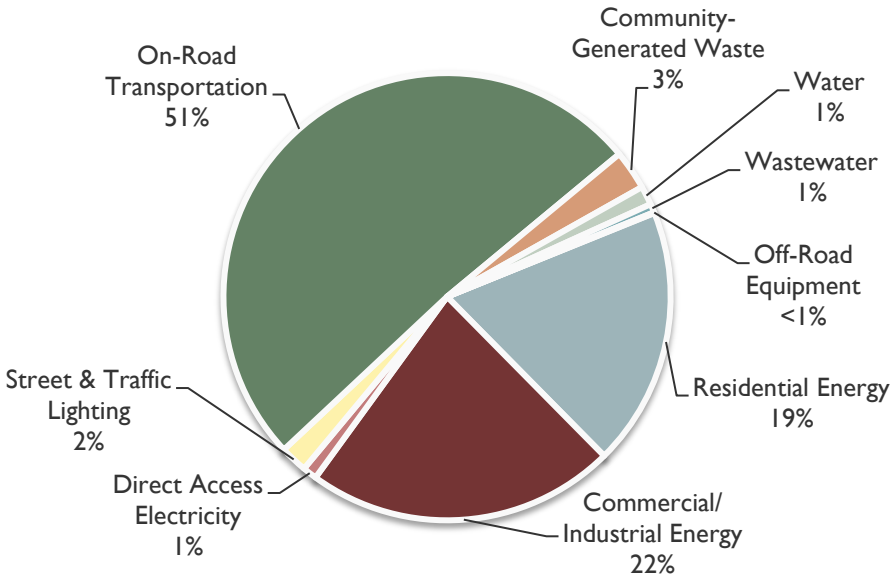


Table ES-1: 2006 and 2010 Activity and GHG Emissions Comparison

Sector	$MTCO_2e$	Percentage of Total
Residential Energy	57,510	19%
Commercial/Industrial Energy	68,850	22%
Direct Access Electricity	3,190	1%
Street and Traffic Lighting	6,050	2%
On-Road Transportation	156,650	51%
Community-Generated Waste	8,780	3%
Water	4,200	1%
Wastewater	1,910	1%
Off-Road Equipment	170	<1%
Total*	**307,310**	**100%**

** Due to rounding, the total may not equal the sum of component parts.*

A business-as-usual (BAU) projection is an estimate of how emissions would grow if consumption trends and efficiencies remain at their 2006 levels and the number of people, households, and jobs continue to grow in San Dimas (see **Table ES-2**) or the status quo scenario before state, regional, and local reduction efforts are taken into consideration. The BAU projection uses various growth indicators and sources that are detailed in **Appendix B**.

Table ES-2: Comparison of Community-wide BAU Forecasts by Sector, 2006 and 2010 ($MTCO_2e$)

Sector	2006	2010	2020	2035
Residential Energy	57,510	52,890	59,090	60,510
Commercial/Industrial Energy	68,850	46,000	71,480	74,110
Direct Access Electricity	3,190	7,020	11,130	11,540
Street and Traffic Lighting	6,050	5,920	6,050	6,050
Transportation	156,650	153,750	161,610	167,130
Solid Waste	8,780	6,650	8,570	8,760
Off-Road Equipment	170	380	760	270
Water	4,200	3,920	4,100	4,190
Wastewater	1,910	1,780	1,860	1,910
Total	**307,310**	**278,310**	**324,650**	**334,470**
Percentage Growth	**0**	**-9%**	**6%**	**9%**

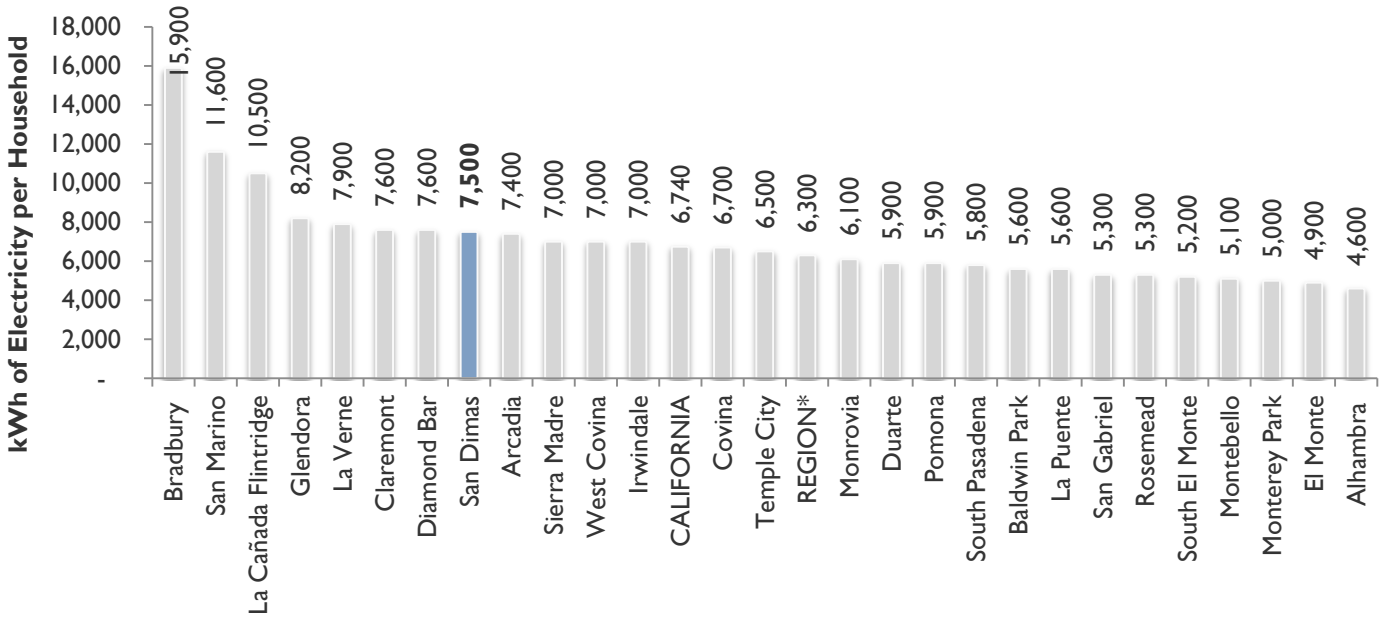
Electricity Profile

The electricity profile included in Chapter 3 describes the residential and nonresidential as well as municipal energy use in the City of San Dimas. These homes and businesses receive their electricity from SCE, which generates it from coal, natural gas, the Big Creek Hydroelectric Plant, the San Onofre Nuclear Generating Station, and renewable energy sources such as biomass, geothermal, solar, and wind farms.

Generating electricity from coal and natural gas produces GHG emissions from burning those fuels. The amount of electricity used to power homes and businesses determines how much power SCE needs to generate and the quantity of GHGs emitted. If the energy needed for daily activities is decreased, reductions can be achieved in the amount of electricity SCE needs to generate and the GHG emissions associated with that power.

San Dimas's electricity uses are tied to the built environment, which is predominantly characterized by residential land uses. As shown in **Figure ES-3**, each San Dimas household used an average of 7,500 kilowatt-hours (kWh) in 2010. This amount is more than the California average of 6,740 kWh and more than the SGVCOG project average of 6,300 kWh. By providing a breakdown of the electricity used in San Dimas' homes and businesses, the strategy can effectively address the different user groups.

Figure ES-3: Annual Average kWh of Electricity Use per Household, 2010

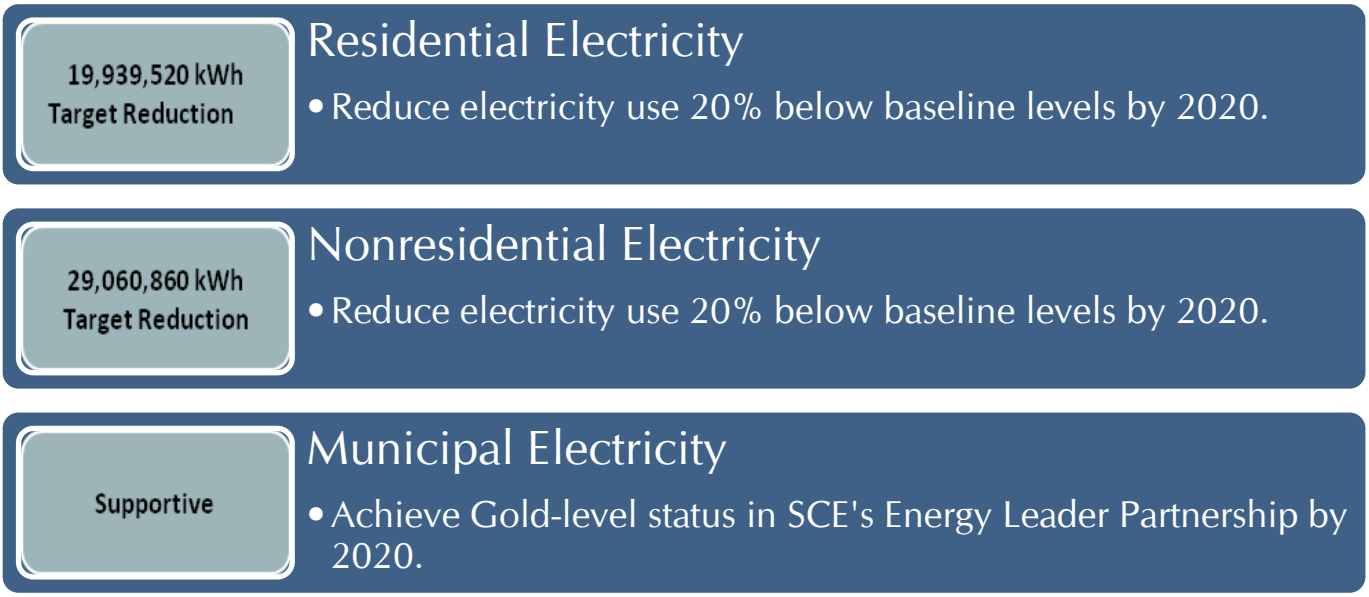


**Regional electricity trends represent the San Gabriel Valley average for all 27 cities participating in the EAP project.*

ELECTRICITY ENERGY EFFICIENCY STRATEGY

The City of San Dimas has identified key energy efficiency targets that support the goals of the Energy Leader Partnership and the local planning priorities in Chapter 4. Consistent with the California Public Utility Commission's CEESP, the focus of this Plan is on electricity efficiency, which provides the added benefit of reducing GHG emissions. In order to achieve the State-recommended GHG reduction target of 15% below baseline emissions levels by 2020 and the electricity reduction targets for each electricity sector that were developed through this planning process, the City of San Dimas will need to implement the goals, policies, and actions set forth in this document (see **Figure ES-4**).

Figure ES-4: San Dimas's Energy Efficiency Targets



The actions included in this Plan build upon measures included in previous efforts and are a diverse mix of programs for both new and existing development. This EEAP identifies a clear path for San Dimas to achieve the community-wide electricity reduction targets for both residential and nonresidential uses. **Figures ES-5** and **ES-6** identify the low and high estimates for both kWh and $MTCO_2e$ reductions by 2020.

Figure ES-5: Estimates 2020 kWh Savings by Goal

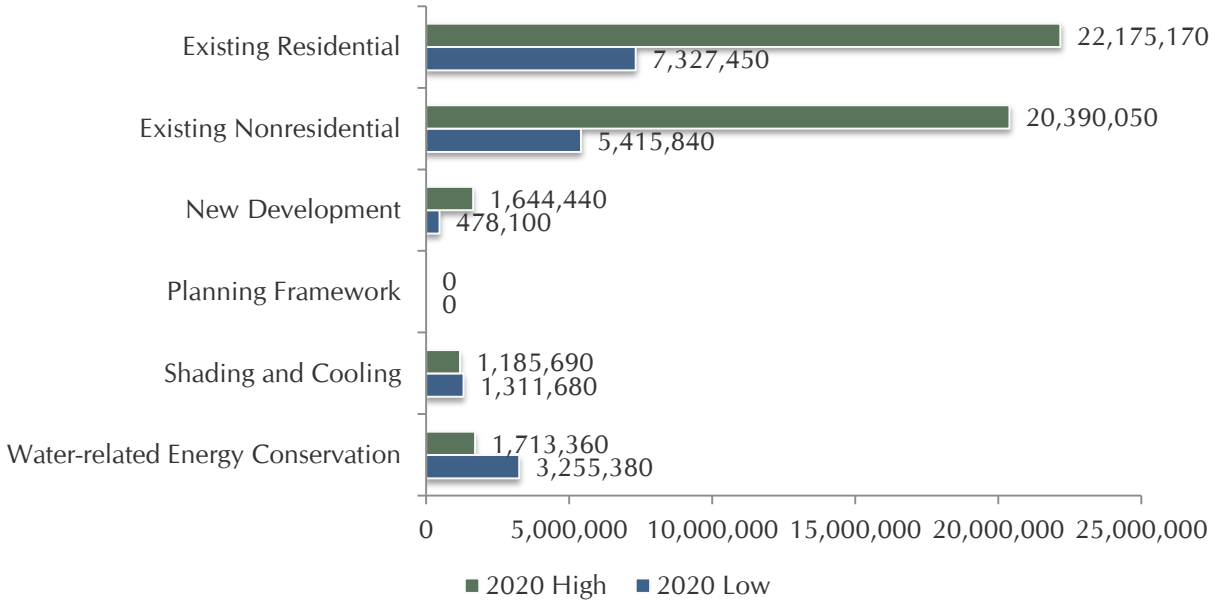
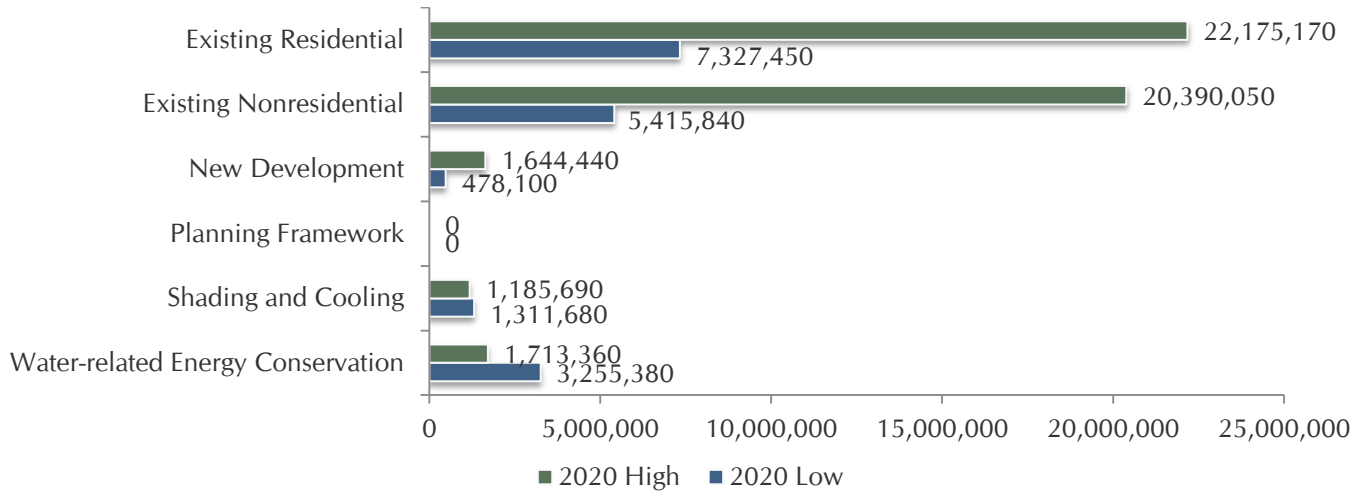


Figure ES-6: Estimates 2020 $MTCO_2e$ Savings by Goal



Implementation

To ensure successful implementation of the EEAP, several strategies and supporting actions have been included in Chapter 5, the implementation chapter. This chapter also includes an implementation matrix with details specific to each policy such as the electricity and GHG reductions that can be achieved. The implementation matrix will be a critical tool in monitoring the City's progress toward implementing the EEAP.

Conclusion

This EEAP is an opportunity for the City to create and achieve a long-term vision for energy efficiency. The City of San Dimas has developed this EEAP as part of a regional framework that allows for close coordination and consistency between communities located in the San Gabriel Valley while responding to local community characteristics, values, and planning frameworks. Although the primary focus of this Plan is on reducing electricity and related GHG emissions, the policies and actions in this Plan also provide the ancillary benefits of improving air quality and the quality of life, enhancing natural areas, and stimulating the local economy through incentives in energy efficiency.

Appendices and Supplemental Materials

To streamline the main document, several technical appendices have been prepared to provide additional detail and information regarding GHG reductions and sources. This Plan includes the following three appendices:

- Survey of resident energy efficiency priorities and activities used to inform the strategy regarding feasible community actions (**Appendix A—Personal Energy Action Survey**).
- Technical memorandum about GHG emissions inventory results and methodologies (**Appendix B—Baseline GHG Inventory**).
- Summary of sources and assumptions used to estimate GHG reductions for each action (**Appendix C—Technical Appendix**).

CHAPTER 1

INTRODUCTION

This Electrical Energy Action Plan (EEAP) identifies an overarching vision and strategy that captures the City's long-term goals for energy efficiency. The intent of this Plan is to achieve optimal energy performance throughout the community, increasing operational productivity, cost savings, and the quality of life for residents, employees, and business owners. This Plan also identifies programs to achieve cost savings in City government facilities through energy reductions and more efficient maintenance and operational practices.

Purpose and Scope

The purpose of this EEAP is to identify the City of San Dimas's long-term vision and commitment to achieve energy efficiency in the community and in government operations. The rationale for San Dimas's energy efficiency efforts includes demonstrating the City's role as a leader to the community on cost-effective energy efficiency improvements, minimizing costs associated with energy and utilities, and protecting limited energy and natural resources.

INTRODUCTION

Local governments play an important role in leading the community by example. This EEAP shows the benefits of efficiency that the City will realize in government operations, providing a foundation for more comprehensive community-wide efficiency strategies. Strategies in this EEAP provide a path toward optimizing energy use in the city, increasing the quality and comfort of homes and businesses, reducing utility costs, and maximizing operational productivity of local businesses.

The EEAP is a stand-alone document that meets multiple objectives of the City and Southern California Edison. The EEAP supports the City's status in the Energy Leader Partnership with SCE. In addition, the EEAP serves as the equivalent of an electricity efficiency chapter of a climate action plan (EECAP). It is designed to integrate into a comprehensive climate action plan when the City's resources support the preparation of a climate action plan to address the reduction of greenhouse gas (GHG) emissions from electricity, natural gas, waste, transportation, and other sectors.

Created in partnership with the San Gabriel Valley Council of Governments (SGVCOG) and Southern California Edison (SCE), this EEAP identifies municipal and community-wide strategies to achieve the City's longer-term electricity efficiency goals. This integration of municipal and community-wide strategies allows the City to lead by example. Specifically, the objectives of this EEAP are to:

- Create a long-term vision for energy efficiency.
- Provide and assess information related to energy use and GHG emissions.
- Establish reduction targets for energy efficiency.
- Identify goals, policies, and actions to achieve energy reductions.
- Provide a framework implementing the identified goals, policies, and actions.

Key Partners in Development of the EEAP

San Gabriel Valley Council of Governments (SGVCOG):

A Joint Powers Authority representing 31 incorporated cities and unincorporated areas in the San Gabriel Valley. The SGVCOG works with member agencies to collectively address transportation, housing, economic growth, and environment issues that are most effectively addressed at a regional scale.

Southern California Edison (SCE):

An investor-owned utility that is the primary electricity provider to the San Gabriel Valley.

SOUTHERN CALIFORNIA EDISON AND THE CALIFORNIA LONG TERM ENERGY EFFICIENCY STRATEGIC PLAN

The California Long Term Energy Efficiency Strategic Plan (CEESP) is the State's road map for achieving energy efficiency through 2020. The CEESP was developed in 2008 through an integrated effort between the California Public Utilities Commission (CPUC), the state's investor-owned utilities, and more than 500 individuals and organizations. The CEESP provides a strategic menu list of options that local governments can use to address the "Big Bold" strategies found in the strategic plan. These "Big Bold" strategies are shown in **Figure 1**.

Figure 1: "Big Bold" Strategies of the CEESP

In addition, the CEESP identifies two primary goals that this EEAP seeks to achieve:

- CEESP Section 12.5 Goal 3: Local governments lead by example with their own facilities and energy usage practices.
- CEESP Section 12.5 Goal 4: Local governments lead their communities with innovative programs for energy efficiency, sustainability, and climate change.

The EEAP meets these goals by providing goals, policies, and actions for municipal operations as well as for community-wide activities. The CEESP also identifies a long-term vision and energy efficiency goals for California, in addition to outlining specific near-term, mid-term, and long-term implementation strategies to assist each economic sector in achieving its energy efficiency goals.

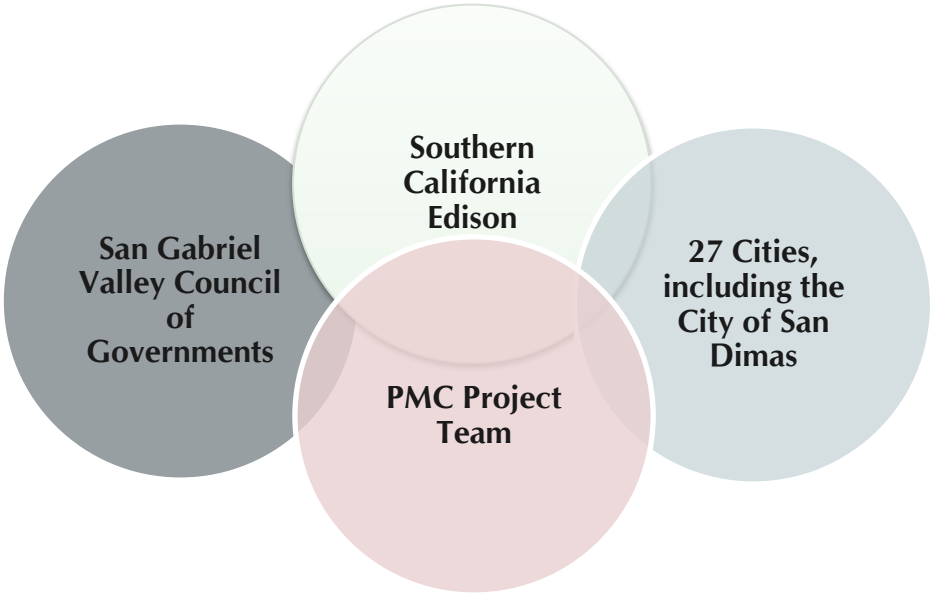
The CPUC identified several policy tools to assist in the market transformation to more energy-efficient products or practices, including:

- Customer incentives.
- Codes and standards.
- Education and information.
- Technical assistance.
- Emerging technologies.

The City prepared this EEAP under the technical assistance umbrella of the CEESP, which aims to provide local governments with the technical expertise and financial resources for implementation and to plan for and achieve energy efficiency at municipal facilities and throughout the community. In 2009, as part of CEESP implementation, the CPUC directed SCE to use funding from the electricity public goods charge to complete strategic plan activities focused on energy efficiency. SCE is implementing the "Big Bold" strategies of the CEESP. Through this process, SCE awarded funding to the SGVCOG to provide funding and technical support for preparation of Energy Action Plans (EAPs) through a regional planning process.

The SGVCOG is managed this project through a partnership with SCE and 27 member cities of the SGVCOG that receive electricity service from SCE.[1] The project included preparation of customized EAPs for each participating city, including a comprehensive GHG emissions inventory, forecast of community-wide activities and municipal operations, and longer-term goals, policies, and actions. This EEAP has been prepared as part of a coordinated effort among the SGVCOG, SCE, the City of San Dimas, and the consultant team led by PMC (see **Figure 2**).

Figure 2: Partners in the EEAP Planning Process



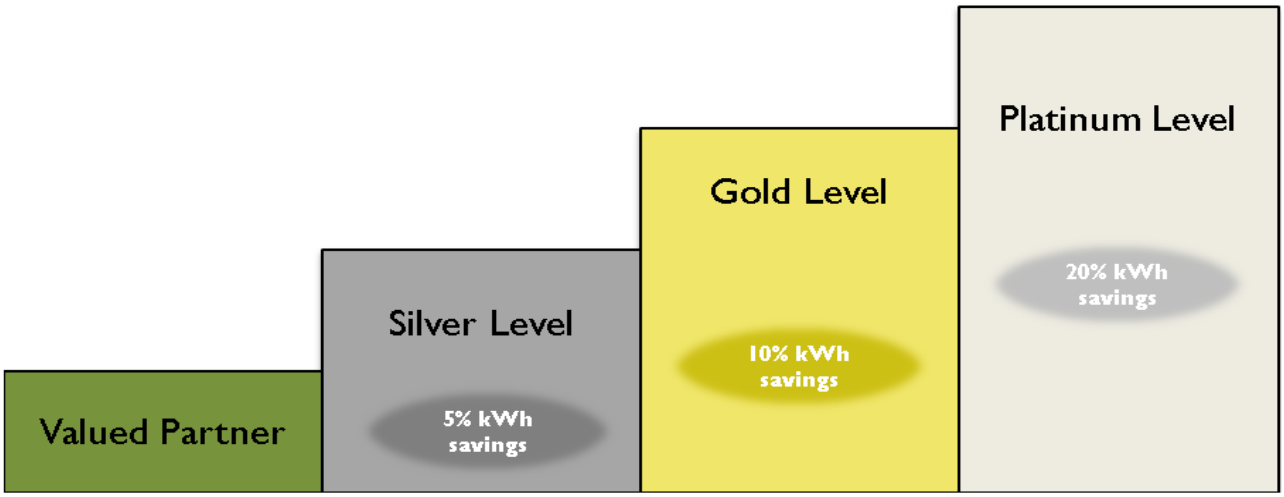
THE ENERGY LEADER PARTNERSHIP MODEL

SCE has developed the Energy Leader Partnership (ELP) model to provide support to local governments in identifying and implementing opportunities to improve energy efficiency in municipal facilities and promoting community awareness of demand side energy management opportunities. By participating in SCE's Energy Leader Partnership, local governments are taking actions to support the CEESP while saving energy and fiscal resources for their community. In the San Gabriel Valley, the SGVCOG is leading the implementation of the ELP with SCE and 27 of the 31 member cities in the SGVCOG.

The ELP comprises four focus areas: municipal retrofits, demand response, strategic plan support, and energy efficiency programs coordination. The ELP program has four incentive tiers for participating cities: (1) Valued Partner, (2) Silver, (3) Gold, and (4) Platinum. Each city begins the program as a valued partner; to advance to the next incentive tier, each participating city must achieve the pre-determined energy savings and requirements for city facilities and community-wide use as shown in **Figure 3.**

[1] While there are 31 cities in the SGVCOG, the cities of Azusa and Pasadena are not eligible to participate in SCE-funded programs as they are their own electricity providers. Additionally, the cities of Industry and Walnut have elected to not participate in this planning process.

Figure 3: Energy Leader Partnership Model



	Valued Partner Level enhanced incentives	Silver Level enhanced incentives	Gold Level enhanced incentives	Platinum Level enhanced incentives
Offerings	• Technical support • Strategic plan support • Co-branded marketing & outreach support	• Technical support • Strategic plan support • Co-branded marketing & outreach support	• Technical support • Strategic plan support • Co-branded marketing & outreach support	• Technical support • Strategic plan support • Co-branded marketing & outreach support • Incentives for customized city/community offerings
Energy Efficiency Criteria	Basic EE Criteria: • Commitment to Long Term Energy Efficiency Leadership	Basic EE Criteria Plus: • City initiative Energy Action Plan • Target at least 25% of City facilities to complete EE upgrades • Target 5% kWh reduction for City facilities • Co-sponsor marketing & outreach to the community on EE programs	Basic EE Criteria Plus: • City initiative Energy Action Plan • Target at least 50% of City facilities to complete specified EE upgrades • Target 10% kWh reduction for city facilities • Co-sponsor marketing & outreach to the community on EE programs	Basic EE Criteria Plus: • City implements Energy Action Plan (policies, ordinances, and procedures) • Target 100% of City facilities to complete specified EE upgrades • Target 20% kWh reduction for City facilities • Co-sponsor marketing & outreach to the community on EE programs

Demand Response Criteria	Basic DR Criteria: • Enroll in California's Statewide Flex Alert and implement an internal educational campaign	Basic DR Criteria Plus: • At least one (1) eligible facility to participate in one (1) SCE Demand Response program • At least one (1) eligible facility to develop a Demand Reduction Action Plan to be followed during a Flex Alert event • Distribute Energy Solutions brochure to partner employees • Complete an integrated Demand Side Management (iDSM) audit at all eligible facilities	Basic DR Criteria Plus: • Have at least 25% of eligible facilities participate in an SCE Demand Response program • Conduct co-branded marketing and outreach to residential customers on SCE's Demand Response programs • At least one (1) eligible facility to implement a DR measure recommended from the iDSM audit	Basic DR Criteria Plus: • At least one (1) eligible facility to participate in one (1) SCE Demand Response program • Have at least 50% of eligible facilities participate in an SCE Demand Response program and develop a Demand Reduction Action Plan for the participating facilities • Organize a local outreach event during the spring/summer season to promote Demand Response/iDSM

Source: SCE 2012

Role of the EEAP

The role of this EEAP is to serve as a strategic plan to achieve electricity efficiency in the community. This is a unique plan that identifies the City's role in reducing electricity use, both as a steward of the community and as a leader through its own operations. Strategies in the EEAP will shape the City's planning framework, prioritize ongoing outreach responsibilities, and guide government operations.

The City will use the EEAP as a tool to facilitate electricity efficiency while achieving other local economic and planning objectives, refining the EEAP as programs are implemented and tested over time. Strategies in this EEAP will be an integral part of resource management, planning, and development in the community. The EEAP is an analytical link for the City between electricity reduction targets, local development, and state and regional electricity planning efforts.

Based on the funding opportunity provided through the CEESP, the EEAP's primary focus is electricity efficiency. While this EEAP presents a comprehensive GHG emissions inventory and forecast, unlike more comprehensive climate action plans or GHG reduction strategies, mitigation strategies in the EEAP focus only on electricity efficiency.

The EEAP provides the City with the added benefit of a foundation to assess local contributions to and impacts of climate change. While the primary focus of this EEAP is electricity efficiency, the GHG emissions inventory in this Plan also provides the City with an understanding of the local equivalent of the State-recommended GHG emissions reduction target to achieve 1990 GHG emissions levels by 2020. AB 32 presents a statewide goal for GHG emissions reduction and provides a foundation for the state to direct GHG

AB 32 (Assembly Bill 32)

Establishes a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases for the State of California.

emissions reductions through regulations, policies, and programs statewide. CEQA requires lead agencies evaluate GHGs and climate change for project subject to CEQA. AB32 is not a direct regulation for cities; however, interpretation and application of AB32 by the Attorney General and state agencies has led it to function as a mandate. Cities are strategically well positioned to comply with potential future regulations by developing plans that address GHG, such as this EEAP.

The AB 32 Scoping Plan identified a variety of measures, including regulations, incentives, voluntary actions, and market-based approaches, to achieve the target reduction. The California Natural Resources Agency has also directed local governments to assess GHG emissions through the California Environmental Quality Act review process. The inventory in this EEAP allows the City to identify the local equivalent of the State-recommended reduction target. The EEAP also allows the City to better understand the GHG mitigation potential of the strategies outlined in this Plan.

Walker House

City Profile

SETTING

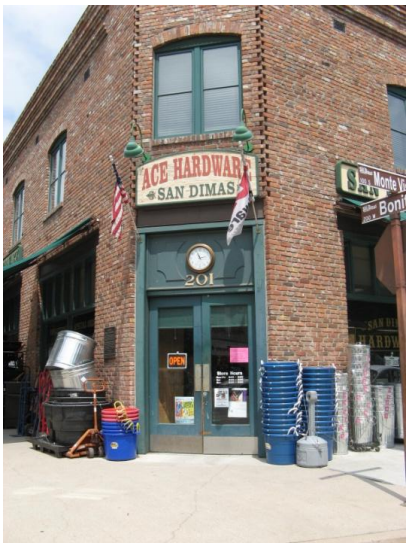
San Dimas is a community encompassing approximately 15 square miles on the northeastern side of the San Gabriel Valley. The city's neighboring communities include Covina to the west, La Verne to the east, and the unincorporated community of Westmont and the city of Pomona to the south. San Dimas is also adjacent to the Angeles National Forest to the north and includes the Frank G. Bonelli Regional Park to the south. The city is known for its open spaces and small-town feel.

History

Similar to many communities in the area, San Dimas was once part of a much larger land grant. In 1837, the land that would become San Dimas was given in the last of the Mexican land grants. The 22,340-acre Rancho San Jose was given by Governor Juan Bautista Alvarado to Ygnacio Palomares and Ricardo Vejar and was used for farming and ranching for more than 50 years.

In 1887, the San Jose Land Company laid down tracks of the Santa Fe Railroad through the area. A new station and railroad hotel were built, similar to other little towns the railroad passed through from Pasadena to San Bernardino. Although the Southern California land boom that sparked the railroad expansion collapsed shortly thereafter, this first urban development marked where San Dimas's historic downtown would grow. Today, the railroad hotel is called the Walker House and is the only one of these hotels still standing.

Until the late nineteenth century, the settlement had been dubbed Mud Springs because of the muddy water hole located there, but the newly

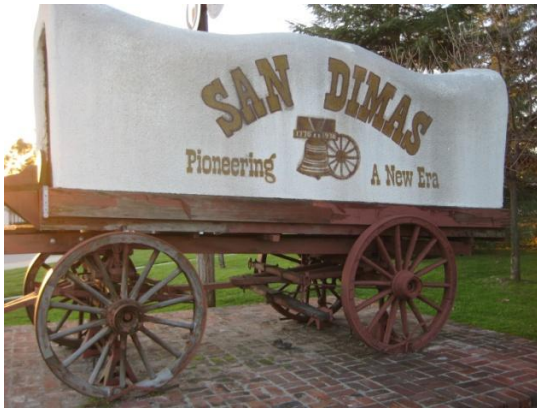


Historic Downtown

thriving settlement took its modern name in honor of San Dimas Canyon in the San Gabriel Mountains above the northern section of present-day San Dimas. The community's economy was based on lumber extraction and strawberry fields, as well as lemon and orange groves that spread across its rich valley fields. Four citrus packing houses and a marmalade factory were located in San Dimas in close proximity to the groves, and it was said that a car passing through town on the narrow highways of the time would be brushed by the orange trees on each side and that the air was perfumed by the orange blossoms in spring. The completion of the San Bernardino Freeway in 1954, coupled with a disease affecting the citrus trees, ended the peaceful agricultural life in San Dimas. Groves were cleared for housing tracts and rapid growth ensued. By 1960, the town had more than doubled its size from the decade before. That year, the town was incorporated with 7,500 residents.

San Dimas continued to grow over the next several decades, though the city managed to retain a number of parks and open spaces as well important historic structures, unlike many of its neighboring communities.

The preservation of the San Dimas historic downtown, in large part, is attributed to the "Frontier Village" concept introduced by Frederic Blitstein in the 1970s. The emphasis was the preservation of historic buildings and monuments in future growth. Today, San Dimas's downtown maintains its historic feeling, with walkable streets, plazas, and dozens of restored historic buildings.



Wagon

SAN DIMAS TODAY

Because of its deliberate preservation efforts, San Dimas is known for its small-town and "historic" character, as well as for its outdoor spaces and equestrian activities.

San Dimas prides itself on preserving that western heritage. Along with its historic downtown, the city maintains a large number of equestrian activities and resources, including an Equestrian Center in Bonelli Regional Park, many equestrian trails, a yearly rodeo, and an Equestrian Commission to guide the City Council on horse-related issues.

The city's character is also maintained through the preservation of open spaces, both abutting the large Angeles National Forest to the north and internal community parks. The City operates 14 recreational facilities and 12 parks, totalling 138 acres of space. Outdoor enthusiasts enjoy the area's riparian habitats along the creeks and the many trails that wind through the area's hills.

The median income of residents is $73,716, significantly higher than the county average ($55,476). A broad range of businesses in the city reaches across the economic spectrum. Major businesses include technical firms such as Automatic Data Processing, Inc., the largest employer in town, and public utilities such as Southern California Gas Company and SCE (see **Table 1**), as well as manufacturing and sales businesses, including a recently opened Costco. Raging Waters, a regional water park, is also a major employer. In addition, San Dimas has a wide range of smaller retail shops and services that help generate taxable sales for the City.

Table 1: Largest Employers, San Dimas, 2008

Employer Organization	Number of Employees
Automatic Data Processing, INC (ADP)	1,192
Southern California Gas Co.	431
Wescorp	410
Louis Vuitton Manufacturing	336
Southern California Edison	281
Raging Waters San Dimas Water Park	261
ITT Technical Institute	215

Source: San Dimas General Plan, Housing Element

The age distribution in San Dimas has shifted over the last several decades. The median age in the city in 2010 was 42.6, almost 8 years higher than the county average of 34.8. Further, aging residents, those over 60 years old, now make up over one-fifth (22.3%) of the population. Consequently, San Dimas will need to accommodate the specific needs of the elderly over the next few years.

The city's racial and ethnic make-up, however, has seen less dramatic changes than those seen by other communities in the San Gabriel Valley (see **Table 2**). The Hispanic population has grown to include 31% of the community since the 1990s but remains significantly below the county average of 48% of residents.

Table 2: San Dimas's Ethnic and Racial Makeup, 2010

Ethnicity/Race	#	%
Hispanic origin (of any race)	10,491	31.4%
Caucasian	17,448	52.2%
Asian, Pacific Islander	3,381	10.1%
Black	1,015	3.0%
Other	1,036	3.3%
total	33,371	100.0%

Source: City of San Dimas Website

SAN DIMAS'S BUILT ENVIRONMENT

Development in San Dimas is characterized as low density. The largest proportion, around 39% of land, is devoted to open space. The next largest category of land use is single-family residential, which accounts for more than 30% of city land area, much of which is very low density estate or ranch-style housing. A limited section of land (5%) is commercial and light industrial, mostly concentrated near the 210 Freeway and Foothill Boulevard (see **Table 3**).

Table 3: San Dimas Land Uses

Land Use Summary	Acres	Percentage
Residential	3,377	35%
Administrative/professional	39	0.4%
Industrial	287	3%
Commercial/mixed-use	225	2%
Public	132	1%
Open space	3,776	39%
Vacant	1,574	16%
other	372	4%
Total	9,782	100%

Source: San Dimas General Plan, Land Use Element 1994

During the 1990s, San Dimas's housing stock grew by 9%, well above the 3% housing growth experienced countywide. The California Department of Finance documents the 2007 San Dimas housing stock at 12,609 units, reflecting a modest 1% increase since 2000. This increase was deemed enough to meet current housing needs; overcrowded housing units represent less than 5% of households.

In 2000, over 30% of the city's housing units were over 30 years old; typically, housing over 30 years in age is likely to benefit from rehabilitation and upgrades. While surveys determined most of the properties were in fairly good condition, the aging of such a large portion of San Dimas's housing stock indicates the significant potential for energy efficiency related physical improvements.

FUTURE DEVELOPMENT

The City's Community Development Department is working on several projects, including rezoning in several areas throughout the city to include new land uses and mixed-use development. The department is specifically working to restore and improve the Walnut Creek Preserve, a 60-acre swath of open space recently purchased by the City near the 57 Freeway and south of Via Verde. The plan for the preserve includes new recreational trails, native plant gardens, and park amenities such as public restrooms. The Public Works Department is updating its Bikeway Systems Master Plan. With funding, the plan would result in new bicycle and alternative transportation infrastructure projects designed to increase public health and improve air quality, among other benefits.

LOCAL ENERGY CONSERVATION EFFORTS TO DATE

In 2010, San Dimas completed a GHG emission inventory and developed an Energy Efficiency Conservation Strategy (EECS) with funding from the US Department of Energy's Energy Efficiency and Block Grant Program. The City identified five broad strategies for action:

1) Engage, support, and educate residents and the business community to sustainably use natural resources.

2) Identify and commit to reducing energy and water use in all City operations, thereby reducing kWh.

3) Conduct energy audits and collect key data and information in order to develop and implement a prioritized set of targets and strategies.

4) Promote energy efficiency and water conservation in City housing programs to reduce kWh.

5) Develop strategies for the reduction of GHG emissions from transportation.

The City's ongoing efforts toward conserving energy and reducing environmental impacts overall include:

- Aiding homeowners and builders to achieve California Green building standards.
- Educating and informing residents about home energy efficiency. The Environmental Services page on the City's website provides valuable resources such as links to a carbon footprint calculator, water conservation information, smart gardening workshops, and recycling tips.

The EEAP Planning Process

The City of San Dimas worked through a five-step planning process, as depicted in **Figure 4**, to develop and implement the EEAP. Following this five-step process allows the City to adequately identify, collect, and analyze the relevant energy and GHG data prior to developing and implementing strategies to improve energy efficiency and reduce GHG emissions.

The EEAP's outreach process engaged City staff, residents, business owners, and stakeholders in the identification and refinement of electricity efficiency issues and strategies. The goal of the outreach process was to help City staff make better decisions and develop effective local strategies for electricity efficiency. City staff also facilitated public outreach through stakeholder focus group meetings, a presentation to the City Council, and an online survey.

The development process for the EEAP relied on a multi-pronged outreach strategy involving City staff, public stakeholders (residents, employees, and business owners), and guidance from a regional Project Steering Committee (PSC).

Figure 4: EEAP Development Process

1. Getting Started	• Assemble City Energy Action Team • Identify data needs and stakeholder groups
2. Collect and Assess Energy Use and GHG Emissions	• Request, collect, and analyze data following protocols • Forecast emissions and set reduction targets
3. Identify Goals and Strategies	• Results of inventory and forecast • Community values and goals
4. Develop Energy Action Plan	• Options to reduce energy use • Costs and benefits of each action
5. Adopt and Implement Plan	• Fund and implement actions • Review progress toward goals

PROJECT STEERING COMMITTEE

Along with city staff representing other San Gabriel Valley cities taking part in the regional Energy Efficiency Climate Action Plan (EECAP) project, City of San Dimas staff participated in a regional Project Steering Committee throughout EEAP development. The committee included representatives from all 27 cities participating in the project. The PSC confirmed a regional approach to EEAP development, guided the project, and shared best practices among jurisdictions to support preparationof tailored, local EEAPs. The PSC convened approximately once a month during June 2011 – September 2012. During PSC meetings, representatives from SGVCOG staff and a technical consultant project team facilitated discussions and presentations to review options to achieve electricity efficiency. Throughout all steps of the process, the City has facilitated ongoing outreach and engagement efforts.

Regional committee members regularly voted on topics through an instant polling tool, Turning Point, to provide input on a variety of topics, including the regional framework, GHG data collection process, GHG scopes and sources, reduction policies, and engagement options for the EEAP. The polling tool collected committee members' responses, which were used to inform the recommendations that the project team used to prepare this EEAP. Other PSC topics included options to conduct public outreach and engage committee members. Regional committee members also presented case studies, shared success stories, and lessons learned from project implementation.

COMMUNITY EVENTS

Public participation encompasses many levels of involvement, engagement, and collaboration among community members, key stakeholders and advocates, elected officials, and staff. As a first step in the public participation process, the project team worked with City staff to develop an outreach strategy appropriate for San Dimas, which focused on reaching the public through community events. Outreach efforts allowed the City to share ideas, collect input, and assess community and stakeholder preferences. Community participation also builds local capacity for project implementation, helping to build momentum for implementation. A summary of these events is shown in **Figure 5** below.

Figure 5: Summary of Community-Wide Events

Western Days Booth – October 1, 2011

- Project information provided to participants
- Surveys conducted

Christmas Tree Lighting – December 3, 2011

- Surveys conducted
- Common themes:
  - Significant participation in lighting upgrades and interest in other energy efficiency improvements
  - Grants and financial incentives identified as good motivators for upgrades

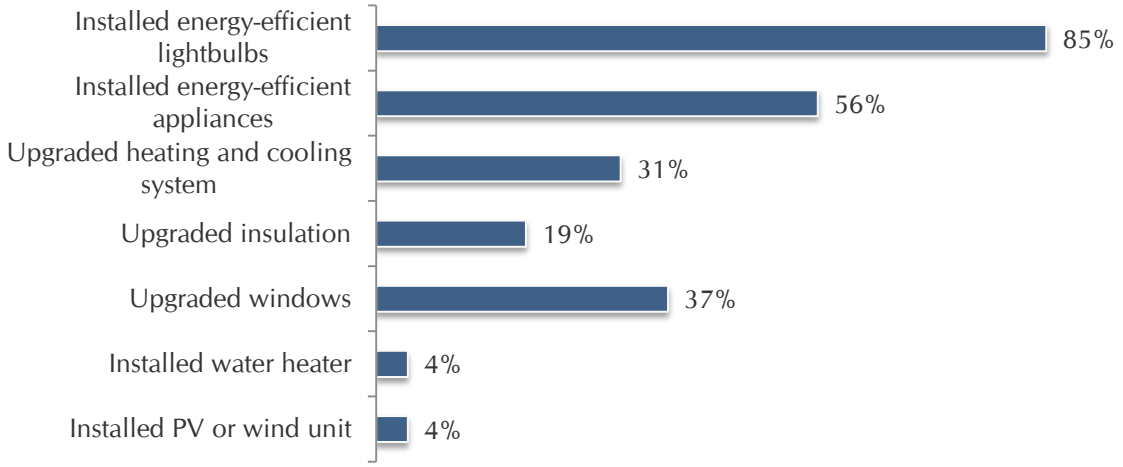
In addition to supporting development of the EEAP, community participation efforts provided information and education to the community about electricity use and opportunities for savings. Outreach at events helped the community to think about strategies to reduce electricity use and improve the quality of homes and businesses.

PERSONAL ENERGY ACTION SURVEY

As part of the regional partnership with the SGVCOG, the City of San Dimas distributed a Personal Energy Action Survey through the City's website (a blank version can be found in **Appendix A**). Although the survey was not conducted as a "statistically valid" survey, this survey provides decision-makers with a useful picture of opinions, actions, and motivating factors involving energy efficiency. In total, 86 people completed the survey, which was offered in English, Spanish, and Chinese. Most respondents were residents of San Dimas (77%) and owned their home (78%).

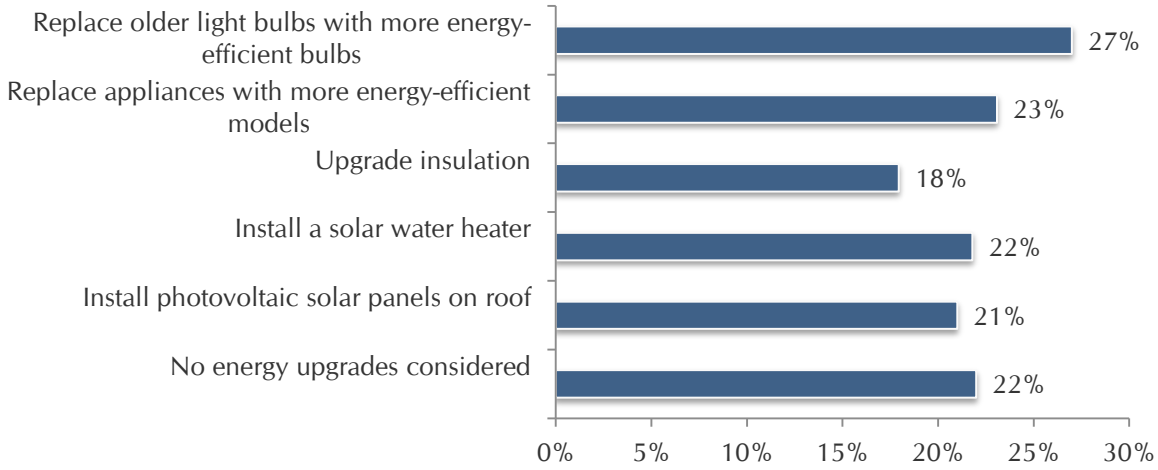
The vast majority of respondents (94%) have already taken action to reduce the energy use of their home or business. Although installing more energy-efficient light bulbs was the most popular action, many respondents had also upgraded their appliances, HVAC, and/or windows to more energy-efficient models. A small number of respondents had taken more ambitious actions, including installing solar water heaters and renewable energy systems. **Figure 6** provides the full results of respondents' actions.

Figure 6: Completed Energy Efficiency Upgrades



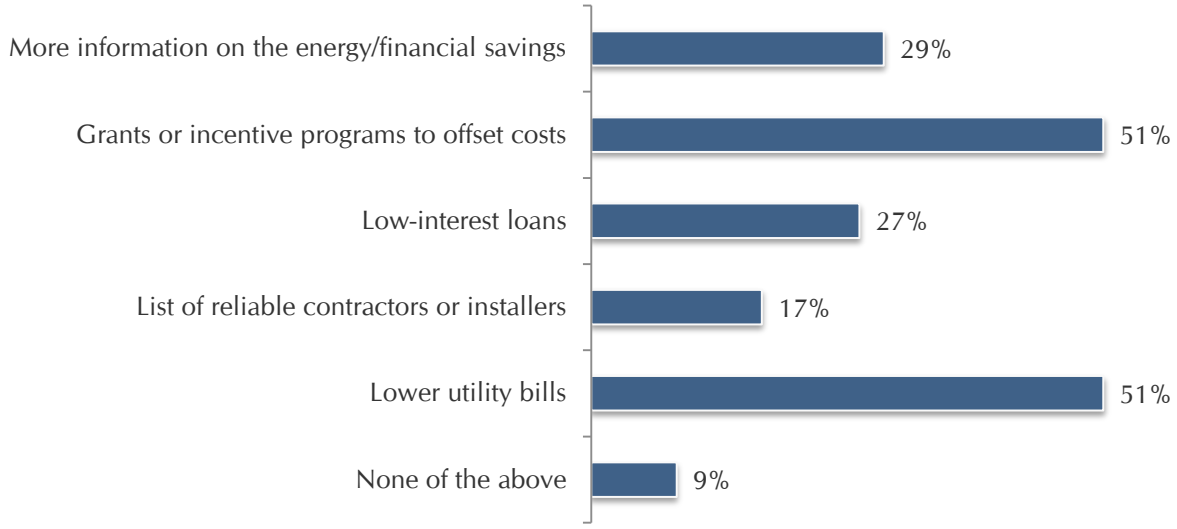
In addition to asking about actions already taken, the survey asked respondents what energy efficiency upgrades they would consider doing in the future, both in the next year and in the next five years. When asked about what they would do in the next year, many respondents favored smaller-scale upgrades such as continuing to replace light bulbs with more energy-efficient models. Over a five-year time frame, some respondents were willing to make greater investments and take actions such as upgrading insulation (18%) or installing solar panels (21%) on their roof to generate electricity. Other respondents (22%) would not consider any efficiency upgrades. **Figure 7** shows the full list of actions respondents would be willing to consider within the next five years.

Figure 7: Energy Efficiency Upgrades that Would Be Considered in the Next 5 Years



Lastly, respondents were asked what would motivate them to make the energy efficiency upgrades identified in the survey. While financial incentives such as grants and lower utility bills were the biggest motivators among respondents, many also reported that they could be encouraged by educational campaigns. Both types of incentives will be discussed later in this EEAP. Answers to this question are illustrated in **Figure 8** below.

Figure 8: Incentives or Motivators for Energy Efficiency Upgrades



CHAPTER 2

GHG INVENTORY AND FORECAST

This greenhouse gas (GHG) emissions inventory and forecast (Inventory) provides a detailed summary of community-wide and municipal GHG emissions. The information is used to create reduction strategies for this Electrical Energy Action Plan (EEAP). It also serves as a foundation for potential future climate action planning projects.

Specifically, the GHG Inventory:

- Presents GHG emissions from community-wide and municipal activities in calendar year 2006;
- Forecasts how community-wide total emissions and electricity-specific emissions will increase by 2020 and 2035 if no behavioral or regulatory changes are made (known as a business-as-usual scenario);
- Adjusts the GHG forecasts to account for reduction efforts mandated by the State of California, such as new energy efficiency and vehicle standards; and
- Provides City staff, decision-makers, and stakeholders with adequate information to direct development of this EEAP and establish GHG emissions reduction and energy efficiency targets.

DESCRIPTION OF RELEVANT EMISSIONS AND KEY CONCEPTS

The Inventory includes the major sources of GHGs caused by activities in the city. These sources are included based on a regionally consistent approach using statewide best practices and California Air Resources Board (CARB) recommendations. The Inventory analyzes GHG emissions from community and municipal sources as described in **Figure 9**. Refer to **Appendix B** for detailed activity data and emissions by sector and subsector and **Appendix C** for activity data sources and specific emissions factors for each subsector.

Figure 9: Community and Municipal GHG Emission Sources, 2006

Community

Energy – Electricity and natural gas consumed by residents and businesses in the city.

Direct Access Electricity – Electricity purchased by commercial customers from energy service providers other than Southern California Edison.

Street and Traffic Lighting – Electricity used by street and traffic lights within the city but not owned by the City.

On-Road Transportation – Vehicle miles traveled (VMT) in, to, and from the city.

Waste – Methane emissions from waste (municipal solid waste), and green waste (alternative daily cover) sent to landfills and regional incinerators.

Water and Wastewater – Energy required to extract, filter, deliver, and treat the water used and wastewater disposed by the community.

Off-Road Equipment – Emissions from construction and lawn & garden equipment operated within the city.

Municipal

Buildings – Electricity and natural gas consumed by City buildings and facilities.

Off-Road Equipment – Fuel used for construction projects, landscaping, or other off-road purposes.

Fleet – Gasoline, diesel, and compressed natural gas (CNG) used by all City-owned vehicles.

Lighting – Electricity, paid for by the City, used by street and traffic lighting and outdoor lighting at parks and other facilities within city limits.

Employee Commute – Emissions from the vehicles City employees use to get to and from work.

Government-Generated Waste – Indirect emissions from the waste disposed by employees and operations of the City.

COMMUNITY-WIDE INVENTORY SUMMARY

The City of San Dimas emitted approximately 307,310 $MTCO_2e$ in the baseline year 2006. As shown in **Figure 10** and **Table 4**, the transportation sector was the largest contributor to emissions (51%), producing approximately 156,650 $MTCO_2e$ in 2006. Commercial and industrial energy use was the next largest sector (22%) with 68,850 $MTCO_2e$, and residential energy use (19%) with its 57,510 $MTCO_2e$ was the third largest sector. (Refer to Appendix B for detailed activity data and GHG emissions for sectors such as residential electricity and natural gas). The remaining 8% of emissions came from community-generated waste, street and traffic lighting, water, wastewater, direct access electricity, and off-road equipment. Overall, these final sectors emitted 24,300 $MTCO_2e$.

Figure 10: Community-Wide GHG Emissions by Sector, 2006

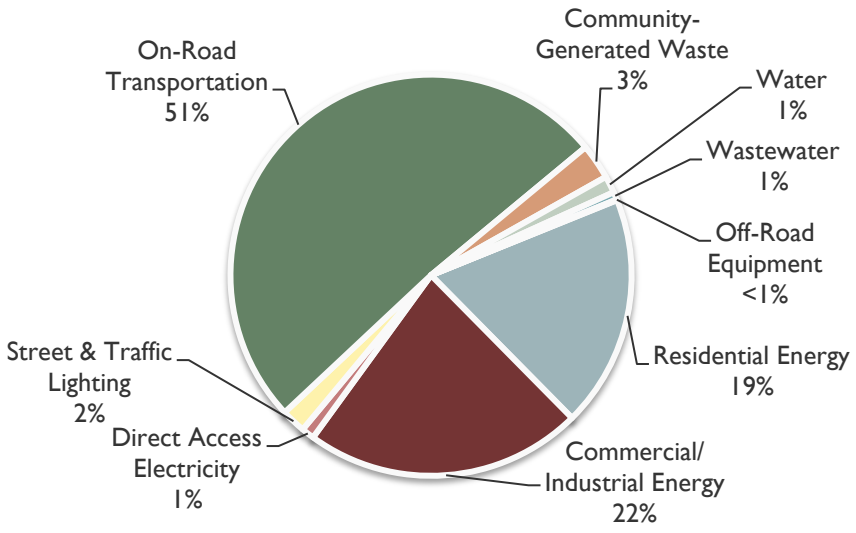


Table 4: Community-Wide GHG Emissions by Sector, 2006 ($MTCO_2e$)

Sector	$MTCO_2e$	Percentage of Total
Residential Energy	57,510	19%
Commercial/Industrial Energy	68,850	22%
Direct Access Electricity	3,190	1%
Street and Traffic Lighting	6,050	2%
On-Road Transportation	156,650	51%
Community-Generated Waste	8,780	3%
Water	4,200	1%
Wastewater	1,910	1%
Off-Road Equipment	170	<1%
Total*	**307,310**	**100%**

** Due to rounding, the total may not equal the sum of component parts.*

2010 COMMUNITY EMISSIONS UPDATE

Activity data for 2010 was available for many community sectors, including energy, transportation, waste, community off-road, wastewater, and water. This information has been translated into GHG emissions for San Dimas and all other participating cities. It will serve as a common benchmark that will allow for accurate comparison between all cities in the San Gabriel Valley participating in the EAP process. This 2010 interim inventory will also help cities track GHG and energy reductions from programs implemented since the baseline.

Table 5 summarizes activity data for 2010 and compares emissions from baseline and 2010 for the community of San Dimas. In 2010, emissions reductions were seen in all community subsectors except direct access electricity, alternative daily cover, and off-road lawn and garden equipment. Off-road construction emissions increased 131%

while there was no change in the number of construction permits issued in the same period. This divergence comes from the shortfalls of the model used to estimate off-road emissions, OFFROAD2007, and the methods used to relate countywide emissions to San Dimas. OFFROAD2007 outputs construction emissions for all of Los Angeles County, and those emissions are assigned to San Dimas using the city's proportion of countywide construction permits issued. In the housing construction decline between 2006 and 2010, fewer permits were issued throughout the county; however, OFFROAD2007 did not show the associated decrease in construction equipment emissions. The large declines in commercial/industrial electricity, natural gas, and residential energy have no direct explanation, but are likely due to the economic downturn in recent years. All subsectors of waste also saw drastic changes from 2006 to 2010. During background research aimed at explaining these changes, the project team noticed the same instability throughout Los Angeles County. Most of the county saw large changes in solid waste disposal from 2006 to 2010

Table 5: 2006 and 2010 Activity and GHG Emissions Comparison

Sector	2006 Activity Data	2010 Activity Data	Percentage Change 2006–2010	Unit	2006 $MTCO_2e$	2010 $MTCO_2e$	Percentage Change 2006–2010
Residential Electricity	99,697,600	90,011,660	-10%	kWh	29,160	25,910	-11%
Residential Natural Gas	5,328,420	5,071,330	-5%	Therms	28,350	26,980	-5%
Commercial/Industrial Electricity	134,406,460	122,694,600	-9%	kWh	54,450	35,320	-35%
Commercial/Industrial Natural Gas	2,706,420	2,008,045	-26%	Therms	14,400	10,680	-26%
Direct Access Electricity	10,897,820	16,752,050	54%	kWh	3,190	7,020	120%
Street & Traffic Lighting	20,684,810	20,572,290	-1%	kWh	6,050	5,920	-2%
On-Road Transportation	294,391,880	297,023,350	1%	VMT	156,650	153,750	-2%
Waste – Solid Waste	42,710	30,610	-28%	Tons of Waste	7,880	5,710	-28%
Waste – Green Waste	5,690	6,090	7%	Tons of ADC	880	940	7%
Waste – Transformed	70	10	-86%	Tons Transformed	20	–	-100%
Off-Road Equipment – Lawn & Garden	6,792	12,273	81%	Households	10	10	0%
Off-Road Equipment – Construction	10	10	0%	Construction Permits Issued	160	370	131%
Water	29,681,520	27,730,700	-7%	kWh	4,200	3,920	-7%
Wastewater	6,538,010	6,108,300	-7%	kWh	1,910	1,780	-7%
				Total*	**307,310**	**278,310**	**-9%**

** Due to rounding, the total may not equal the sum of component parts.*

MUNICIPAL INVENTORY SUMMARY

The municipal inventory includes GHG emissions from the operations and activities conducted by the City of San Dimas. GHG emissions were calculated from activity data collected by the City. Operations and activities by the City in 2006 resulted in approximately 1,750 $MTCO_2e$**. Figure 11** and **Table 6** depict the contribution of each activity to total GHG emissions. The majority of emissions (44%) were released from the buildings sector, with 780

$MTCO_2e$. The next largest producers of municipal GHGs were the lighting (31% of emissions with 550 $MTCO_2e$) and fleet (13% of emissions with 220 $MTCO_2e$) sectors. The final two sectors of GHGs were employee commute and government-generated waste, emitting 170 $MTCO_2e$ and 30 $MTCO_2e$, respectively.

Figure 11: Municipal GHG Emissions by Sector, 2006

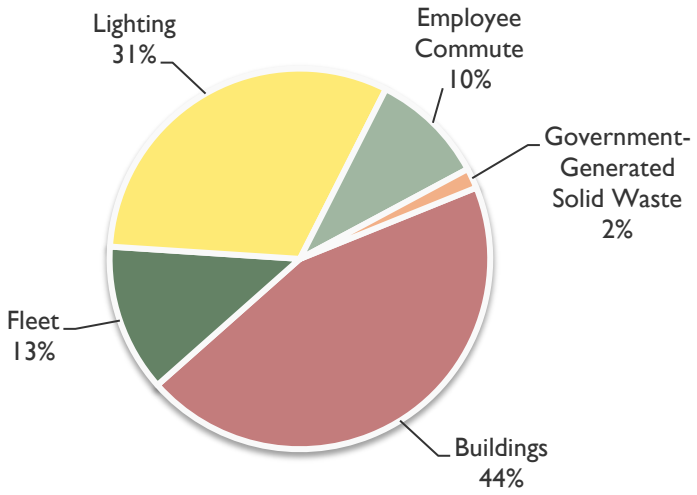


Table 6: Municipal GHG Emissions by Sector, 2006

Sector	$MTCO_2e$	Percentage of Total
Buildings	780	44%
Fleet	220	13%
Lighting	550	31%
Employee Commute	170	10%
Government-Generated Waste	30	2%
Total*	**1,750**	**100%**

** Due to rounding, the total may not equal the sum of component parts.*

2010 MUNICIPAL EMISSIONS UPDATE

As with the community data, municipal activity data was available for 2010 for the following sectors: building electricity use (natural gas use was not available at the time of this report), streetlights, traffic lights, SCE-owned streetlights, and employee commute. This information, shown in **Table 7**, has been used to create a snapshot of 2010 municipal GHG emissions. Emissions from City operations in 2010 were estimated at 1,710 $MTCO_2e$, a 2% decrease from baseline. Since city hall was not occupied fully during the calendar year of 2010, a FY2011/12 proxy was used to estimate electricity usage. This information was provided by SCE in the form of an account summary for the city hall electricity account.

Table 7: Comparison of Municipal GHG Emissions, 2006–2010

Sector	2006 Activity	2010 Activity	Change 2006–2010	Unit	2006 $MTCO_2e$	2010 $MTCO_2e$	Change 2006–2010
Buildings – Electricity	1,952,550	1,796,420	-24%	kWh	570	440	-9%
Buildings – Natural Gas**	39,450	39,450	0%	Therms	210	210	0%
Fleet – Gasoline**	14,520	14,520	0%	Gallons	130	130	0%
Fleet – Diesel**	8,990	8,990	0%	Gallons	90	90	0%
Fleet – Electric**	2,820	2,820	0%	Gallons	-	-	-
Lighting – Streetlights	227,420	239,540	5%	kWh	70	70	0%
Lighting – Traffic Lights	194,440	178,280	-8%	kWh	60	50	-17%
Lighting – SCE-Owned	1,453,310	1,450,510	0%	kWh	420	420	0%
Employee Commute	444,640	478,840	8%	kWh	170	190	12%
City-Generated Waste	50	50	0%	VMT	30	30	0%
				Total*	**1,750**	**1,630**	**-2%**

** Due to rounding, the total may not equal the sum of component parts.*
***Activity data was not available at the time of this report. Baseline information is used as a proxy.*

Business-as-Usual GHG Emissions Forecast

COMMUNITY BUSINESS-AS-USUAL INDICATORS

Table 8 lists the various growth indicators and sources used in the forecasting of San Dimas's community-wide emissions. For a detailed explanation of indicator methodology for all sectors, see **Appendix B**. Future energy use (including electricity) was forecast by assuming that the energy consumption per household and per job would stay roughly the same over time. For residential energy use, household growth rates are calculated and multiplied by the per-household energy use rate. Similarly, for commercial and industrial energy use, emissions are assumed to grow with the number of jobs.

Table 8: Comparison of 2006 and 2010 to Forecast Jobs, Households, and Transportation Trends

Growth Indicator	Emissions Sector	2006	2010	2020	Sources
Jobs	Commercial/ Industrial Energy	13,100	13,200	13,600	2010 Census, SCAG 2012 RTP, SCAG 2003 RTP
Service Population (Residents + Jobs)	Solid Waste, Water, Wastewater	49,800	46,600	48,600	2010 Census, SCAG 2012 RTP, CA DOF
Households	Residential Energy, Off-Road	12,300	12,000	12,600	2010 Census, SCAG 2012 RTP, CA DOF
Annual VMT	On-Road Transportation	294,391,900	297,023,400	303,719,900	Fehr & Peers Transportation Consultants, SCAG 2003 RTP

COMMUNITY BUSINESS-AS-USUAL FORECAST

Table 9 summarizes the growth forecast of GHG emissions by activity sector without any actions or policies in place to reduce GHG emissions. Under the BAU growth scenario, baseline emissions are estimated to grow by 6% to 324,650 $MTCO_2e$ in 2020. Most sectors show slight growth in 2020. Off-road equipment shows a decrease between 2020 and 2035. This divergence comes from the shortfalls of the model used to estimate off-road emissions, OFFROAD2007, and the methods used to relate countywide emissions to San Dimas. OFFROAD2007 calculates construction emissions for all of Los Angeles County, and those emissions are assigned to San Dimas using the City's proportion of countywide construction permits issued. In the housing construction decline in recent years, fewer permits were issued than in the past throughout the county; however, OFFROAD2007 did not show the associated decrease in construction equipment emissions.

Table 9: Comparison of Community-Wide BAU Forecasts by Sector, 2006 and 2010 (MTCO2e)

Sector	2006	2010	2020
Residential Energy	57,510	52,890	59,090
Commercial/Industrial Energy	68,850	46,000	71,480
Direct Access Electricity	3,190	7,020	11,130
Street and Traffic Lighting	6,050	5,920	6,050
Transportation	156,650	153,750	161,610
Solid Waste	8,780	6,650	8,570
Off-Road Equipment	170	380	760
Water	4,200	3,920	4,100
Wastewater	1,910	1,780	1,860
Total*	**307,310**	**278,310**	**324,650**
Percentage Change from 2006	**0**	**-9%**	**6%**

** Due to rounding, the total may not equal the sum of component parts.*

MUNICIPAL BUSINESS-AS-USUAL FORECAST

The municipal BAU forecast assumes a no-growth scenario for municipal emissions based on 2010 emissions. Emissions for 2020 are forecasted, or assumed to stay static, from 2010 emissions to account for efficiency actions taken by the City of San Dimas since the baseline year. **Table 10** shows the overall and changes in emissions.

Table 10: Comparison of Municipal BAU Forecasts by Sector, 2006 and 2010 ($MTCO_2e$)

Sector	2006$MTCO_2e$	2010 $MTCO_2e$	2020 $MTCO_2e$
Buildings	780	730	730
Fleet	220	220	220
Lighting	550	540	540
Employee Commute	170	190	190
Government-Generated Waste	30	30	30
Total*	**1,750**	**1,710**	**1,710**
Percentage Change from 2006	**–**	**-2%**	**-2%**

** Due to rounding, the total may not equal the sum of component parts.*

STATE ADJUSTMENTS TO BUSINESS-AS-USUAL (ABAU) FORECAST

STATE REDUCTIONS

The State has been a proactive force in reducing GHG emissions. Regulations affecting vehicle standards, building standards, and the renewable energy content of electricity will reduce GHG levels in the city. The state actions listed below are incorporated into the BAU forecast to create a more realistic estimate of San Dimas's future emissions. For a detailed description of these actions, see **Appendix B**.

Clean Car Fuel Standard (Assembly Bill 1493 – Pavley). Requires carmakers to reduce GHG emissions from new passenger cars and light trucks beginning in 2011. CARB anticipates that the Pavley standards will reduce GHG emissions from California passenger vehicles by about 22% in 2012 and by about 30% in 2016.

Renewables Portfolio Standard (RPS). Requires utility providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and to 33% by 2020. Due to potential implementation issues, the ABAU forecast assumes that energy providers will achieve a minimum 28% renewable energy portfolio by 2020.

California Building Code (Title 24, CALGreen). Requires each new building constructed in California to incorporate direct electricity, natural gas, and water savings.

California Solar Initiative (CSI). A state program providing cash rebates for the installation of electric solar panels.

COMMUNITY ABAU FORECAST

All state programs highlighted above are included in the community-wide ABAU forecast. As shown in **Table 11**, these state reduction efforts are anticipated to reduce BAU emissions by 41,070 $MTCO_2e$ in 2020. The majority of these reductions are from the AB 1493 (Pavley) standards and the Renewables Portfolio Standard. In comparison to the BAU scenario, 2020 emissions with state reduction measures are 8% below baseline 2006 levels (**Table 12**).

Table 11: Impact of State Reductions on Community Emissions, 2020 ($MTCO_2e$)

State Reductions Summary	2020 $MTCO_2e$
Pavley Reductions	24,950
RPS Reductions	13,050
CA Building Code Reductions	2,040
CSI Reductions	1,030
Total State Reductions*	**41,070**

**Due to rounding, the total may not equal the sum of component parts.*

Table 12: Comparison of Community ABAU Forecasts by Sector, 2006 and 2010 Emissions ($MTCO_2e$)

State Reductions Summary	2006MTCO2e	2010 MTCO2e	2020 MTCO2e
Growth Projection	307,310	278,310	324,650
Total State Reductions	–	–	-41,070
Adjusted BAU Forecast (2020, 2035)*	**307,310**	**278,310**	**283,580**
Percentage Change from 2006	–	-9%	-8%

State Reductions Summary	2006MTCO2e	2010 MTCO2e	2020 MTCO2e

Due to rounding, the total may not equal the sum of component parts

MUNICIPAL ABAU FORECAST

Only certain state reduction programs affect the municipal BAU forecast. These include the Renewables Portfolio Standard, the Pavley standards, and the Title 24 efficiency standards. The primary reductions will occur from the AB 1493 (Pavley) standards and the RPS (see **Table 13**). The CSI is not applicable to municipalities and is not quantified. **Table 13** shows the effect of the state reduction efforts on BAU emissions. Emissions in 2020 are expected to be reduced by 190 $MTCO_2e$ in 2020. No reductions came from the Title 24 reductions because the City does not have any set plans to expand buildings in the future. ABAU emissions are 13% below baseline 2006 levels (180 $MTCO_2e$) in 2020.

Table 13: Impact of State Reductions on Municipal Emissions, 2020 ($MTCO_2e$)

State Reductions Summary	2020 $MTCO_2e$
Pavley Reductions	-60
RPS Reductions	-130
Total State Reductions*	**-190**

Due to rounding, the total may not equal the sum of component parts.

Table 14: Comparison of Municipal ABAU Forecasts by Sector, 2006 and 2010 Emissions ($MTCO_2e$)

State Reductions Summary	2006	2010	2020
BAU Forecast	1,750	1,710	1,710
Total State Reductions	–	–	190
ABAU Forecast*	1,750	1,710	1,520
Adjusted Percentage Change from 2006	–	-2%	-13%

*Due to rounding, the total may not equal the sum of component parts.

REDUCTION TARGETS

As previously mentioned, this EEAP can serve as the foundation for future climate action planning projects. Community-wide GHG reduction targets have been included as an informational item. While this overall GHG emissions reduction target was consulted when establishing community-wide and municipal electricity reduction targets, the two are not linked directly. For electricity-specific community-wide reduction goals, see **Chapter 4**.

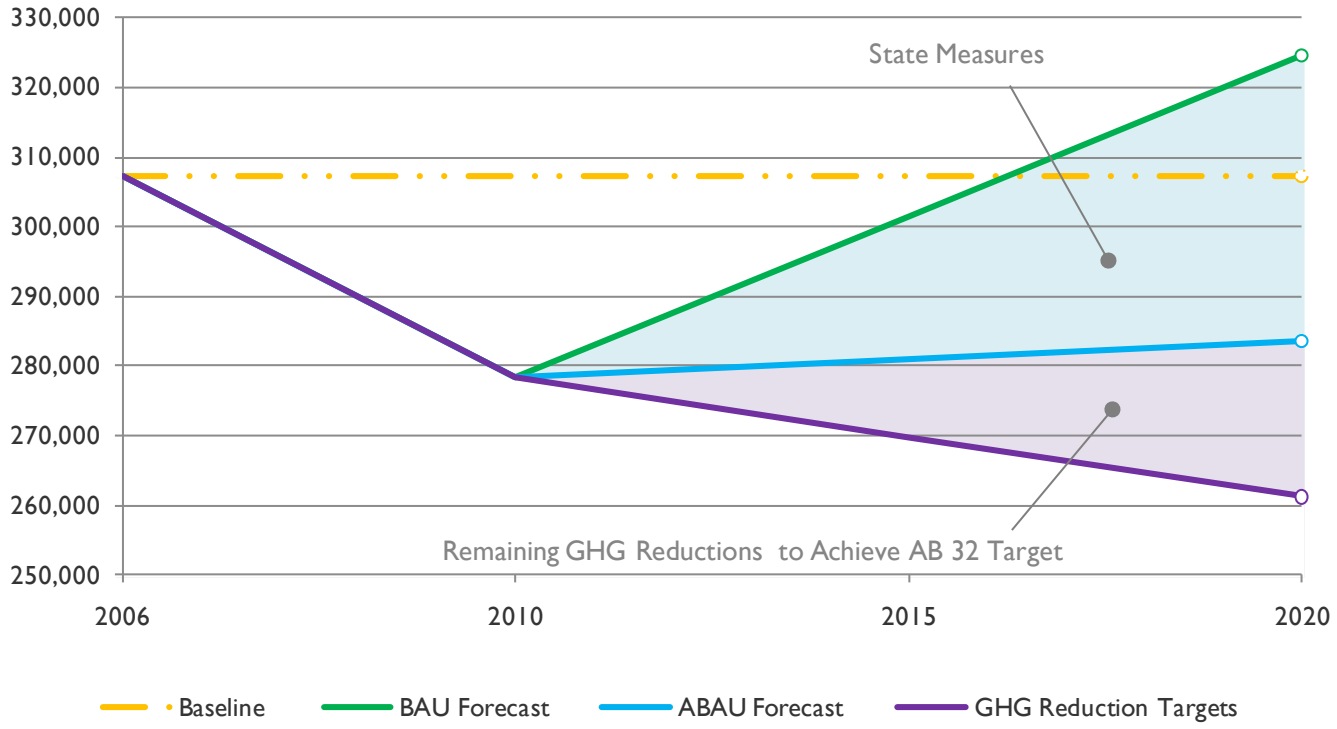
STATE RECOMMENDED 2020 REDUCTION TARGETS

AB 32 recommends that local governments adopt a GHG reduction target of 15% below baseline levels by 2020. As shown in **Table 15** and **Figure 12**, San Dimas would need to facilitate a reduction in emissions of 22,370 $MTCO_2e$ to meet the State-recommended AB 32 Scoping Plan goal of 15% below baseline levels by 2020.

Table 15: Comparison of BAU Forecast and Reduction Target, 2006–2020

	2020
AB 32 Target Percentage Reduction from Baseline	15%
Emissions Goal	261,210
Adjusted BAU Forecast with State Reductions	283,580
Local Reduction Needed from Adjusted BAU	22,370

Figure 12: Comparison of BAU Forecast and Reduction Target, 2006–2020



CHAPTER 3

ELECTRICITY PROFILE

Electricity used in San Dimas's homes and businesses is provided by Southern California Edison (SCE). SCE generates electricity from a mix of nonrenewable sources, such as natural gas and coal, and renewable sources, such as biomass, geothermal, hydroelectric, solar, and wind. SCE operates the Big Creek Hydroelectric Plant and San Onofre Nuclear Generating Station in the region.

The amount of electricity used to power homes and businesses determines how much power SCE needs to generate and the quantity of greenhouse gases (GHGs) emitted. If the energy needed for daily activities is decreased, reductions can be achieved in the amount of electricity SCE needs to generate and transmit. In addition, GHGs associated with electricity generation would decrease. The most common uses of electricity are for lighting and heating/cooling buildings, for powering appliances such as refrigerators, computers, and washing machines, and for pumping water around the city and into homes or to treatment plants. An example of a home with energy-efficient features is shown in **Figure 13**.

Figure 13: Efficient Home Features

Source: PMC 2012

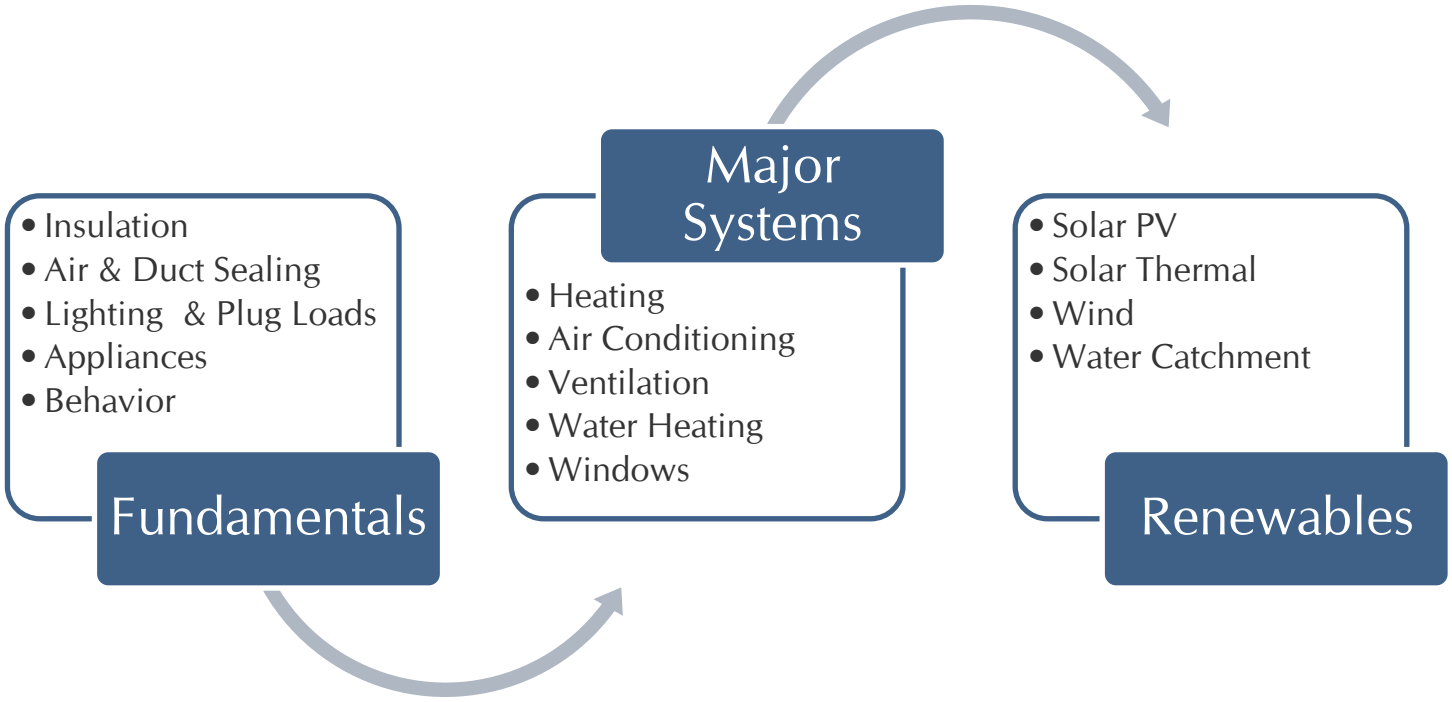
The Electricity Reduction Loading Order

GHGs from electricity use can be reduced primarily through increasing conservation (for example, avoiding using electricity) and improving efficiency (for example, using less electricity for the same activity) when conservation cannot be realized. Common conservation practices include unplugging appliances and electronics when not in use and turning off lights during the day or when the room is empty. Increasing energy efficiency means replacing incandescent light bulbs with compact fluorescent lights (CFLs) and inefficient or older models of appliances and electronics with new, preferably Energy Star (or other efficiency label), models in order to use less energy when it is necessary.

Using small renewable solar panels can also reduce demand from SCE for daily electricity use. Reductions in electricity used for water pumping in the community can be achieved by using less water for irrigation and other household uses. More efficient toilets, showerheads, faucets, and drip irrigation systems can help conserve water to reduce kWh usage. These features are just some examples of energy efficiency and conservation. This Electrical Energy Action Plan (EEAP) outlines programs and policies to support efficiency and conservation of electricity use in the community.

When completing energy efficiency retrofits to buildings, there is a loading order that should be followed to maximize energy savings while minimizing added costs. **Figure 14** depicts the recommended loading order for undertaking energy efficiency projects and retrofits.

Figure 14: Retrofitting Loading Order



Community Electricity Demand

Similar to other cities in the San Gabriel Valley, San Dimas's electricity uses are tied with the built environment, particularly residences. Of the total land area of 9,782 acres, 3,377 acres, or about 35%, consists of residential land uses. In comparison, commercial, industrial, and public land uses account for only 7% of San Dimas's land area, with a variety of businesses located along Foothill Boulevard and near the 210 Freeway. Unlike densely populated cities in other parts of the San Gabriel Valley, San Dimas is unique because of its large areas of open space, representing 40% of its land area.

Similar to much of Los Angeles County, San Dimas's housing stock has remained relatively unchanged over the past decade, with a higher proportion of older homes than the state as a whole. In addition, residential units that resemble estate or ranch-style housing contribute to the pattern of low-density development. About 60% of homes in San Dimas are single-family detached homes (see **Table 16**). Additionally, the homeownership rate in San Dimas is 75% of homes, higher than most of California. Together, these factors ensure there is significant potential for home energy efficiency upgrade programs in the city.

Unique characteristics of San Dimas's built environment include:

Low-density development with residential land uses (estates or ranch-style housing) covers 35% of the land area, and open space represents 40% of the land area.

Commercial/mixed use, industrial, and public land uses comprise only 7% of the land area.

Majority of the households in San Dimas are families, comprising 74% of all households.

High rate of homeownership, at 75% of homes.

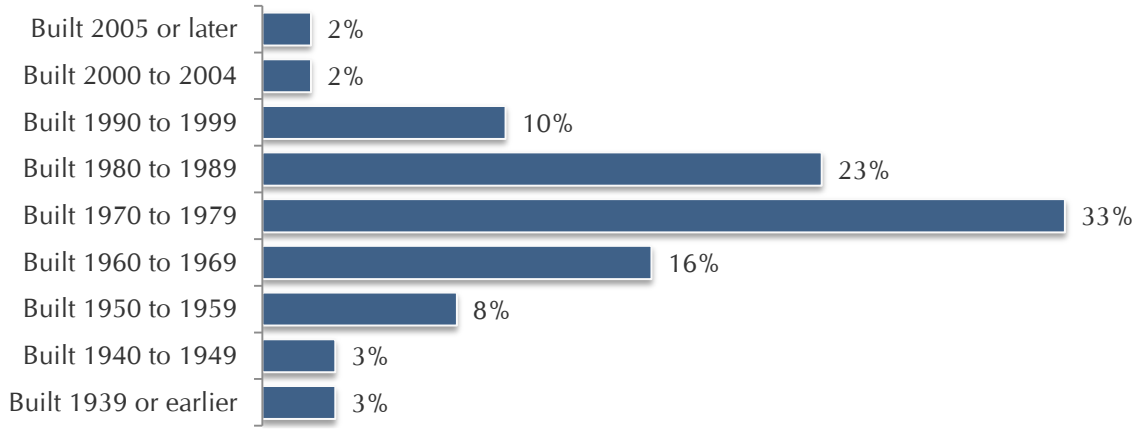
Table 16: San Dimas's Housing Units by Type, 2007

Housing Units by Type (2007)	Number of Units	Percentage of Units
Single-Family (Detached)	7,591	60%
Single-Family (Attached)	2,100	17%
2 to 4 units	357	3%
5 or more units	1,618	13%
Mobile Homes	943	7%
Total Units	**12,609**	**100%**

Source: City of San Dimas, Housing Element, 2008–2014

Older homes can often see significant energy use improvements from easy, inexpensive upgrades like caulking and appliance upgrades. Although many homes are in good condition, over 30% of the city's housing units were over 30 years old. The number of single-family homes owned by the occupants typically results in higher interest and investment in energy efficiency upgrades, since homeowners can more directly see the benefits of lowered utility bills and increased property values through energy efficiency improvements than renters.

Figure 15: Age of Housing Stock in San Dimas



Source: US Census 2010

With high homeownership and a considerable proportion of aging housing stock, San Dimas has significant potential in enacting energy efficiency policies in the residential sector for a considerable reduction in overall energy use.

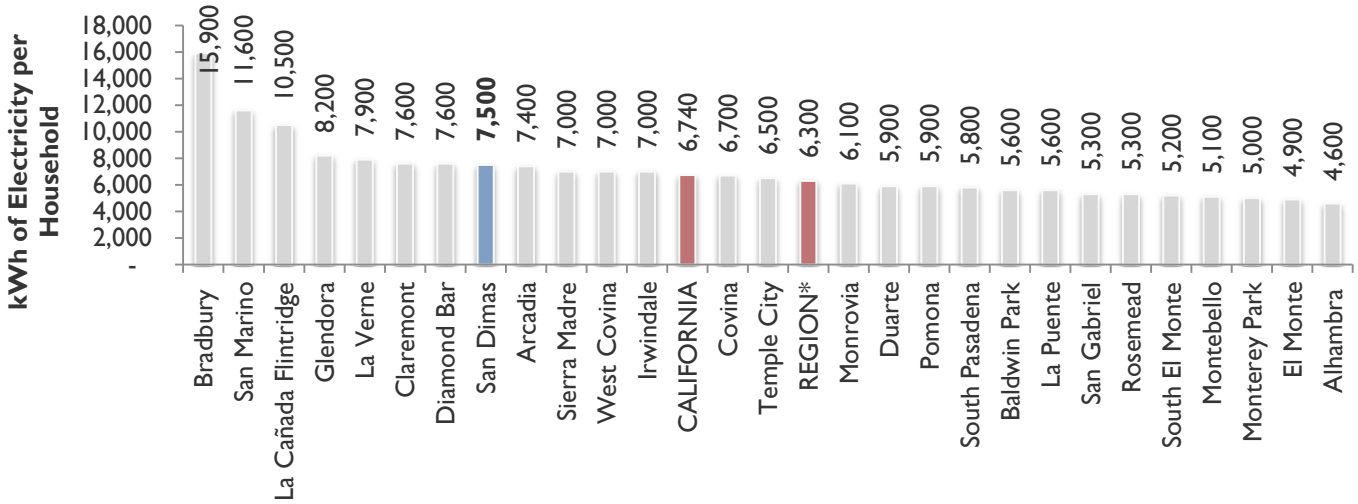
FUTURE DEVELOPMENT

A number of developments are planned for the future of San Dimas. The City's Community Development Department is working on several projects, including rezoning in several areas throughout the city to include new land uses and mixed-use development. The City of San Dimas has also identified additional projects undergoing analysis and consideration that will further reduce energy consumption and GHG emissions in their jurisdiction related to transportation, solid waste, and home energy performance.

COMMUNITY COMPARISON TO REGIONAL AND STATEWIDE ENERGY DEMAND

To compare local trends to regional trends and other cities within the San Gabriel Valley, 2010 electricity data was assessed for all cities participating in the EAP process, regardless of each city's inventory baseline year. Comparison of 2010 community-wide electricity use allowed for a common regional benchmark. It is important to understand how San Dimas's electricity use compares to regional and statewide electricity use. As shown in **Figure 16**, each household in City of San Dimas used an average of 7,500 kWh of electricity in 2010. This usage is above the California household average of 6,740 kWh and the San Gabriel Valley regional average of 6,300 kWh.

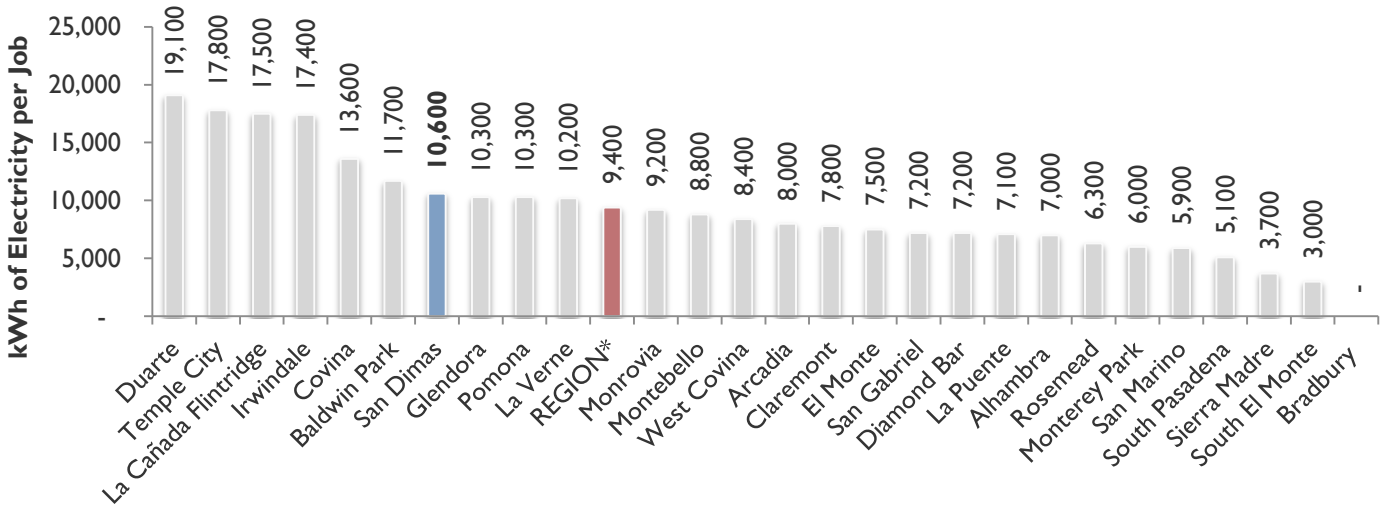
Figure 16: Annual Average kWh of Electricity Use per Household, 2010



**Regional electricity trends represent the San Gabriel Valley average for all 27 cities participating in the EAP project.*

In 2010, San Dimas had the seventh highest use of nonresidential electricity of all participating San Gabriel Valley cities, with approximately 10,600 kWh per job. As **Figure 17** illustrates, this amount is more than the electricity use of other cities in the San Gabriel Valley, which averaged 9,400 kWh in 2010. This trend represents the higher energy intensity nature of the businesses in San Dimas, which can be attributed to the presence of two utility companies, SCE and Southern California Gas Company, as well as Raging Waters Theme Park and light manufacturing businesses. While these businesses do not represent a large amount of the land area in San Dimas, their structures may have high energy demands. In contrast, other cities that have more service- or retail-oriented businesses with a sizable number of employees have lower energy use per job.

Figure 17: Annual Average kWh of Electricity Use per Job, 2010



** Regional electricity trends represent the San Gabriel Valley average for all 27 cities participating in the EAP project.*

Municipal Electricity Demand

In 2006, the City of San Dimas used 1,952,550 kWh from building and outdoor facilities, as well as lighting. **Table 17** depicts total municipal electricity use and provides detailed energy totals by rate class for 2006. There are two primary categories in which San Dimas's municipal energy use is classified: buildings and facilities and public lighting. Within each category are a series of rate groups.

In the building and facility sector, the two rate classes are non-demand rated (GS-1) and demand rated (GS-2). Most of the City's larger facilities and buildings fall into the GS-2 category, meaning the cost of electricity used by these facilities is based on a tiered approach where higher rates of energy use cost more per kWh used. GS-1 electricity accounts include smaller buildings, parks facilities, and irrigation controls with lower levels of electricity use than GS-2 accounts. Time of Use (TOU), or variable, rates depend on the time of day. TOU-GS-3 accounts include larger facilities that use between 200 and 500 kW, with higher rates charged for certain peak times that are known in advance and vary between the summer and winter seasons. In 2006, 1,696,200 kWh or 87% of the City's building- and facility-related electricity use fell into the demand rated group, with the non-demand rated accounts totaling 256,350 kWh.

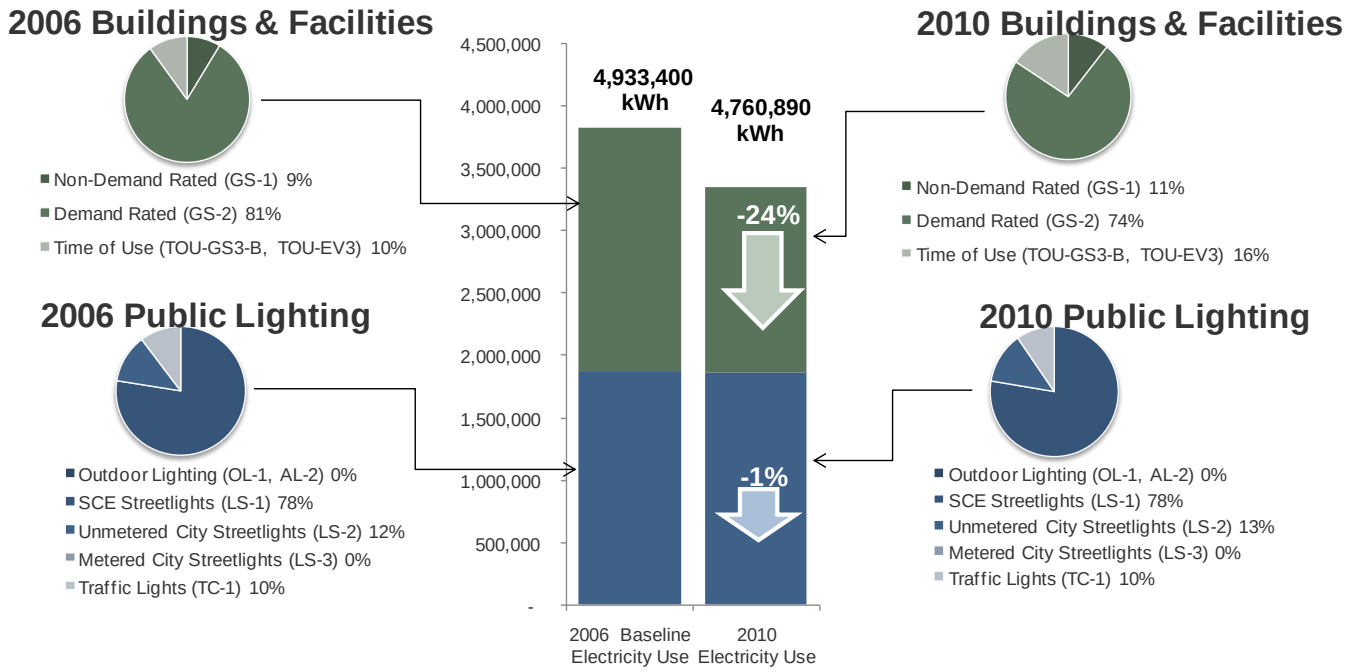
There are four types of rate classes in the public lighting category: SCE-owned streetlights (LS-1), unmetered City-owned streetlights (LS-2), metered City-owned streetlights (LS-3), and traffic signals and controllers (TC-1). In San Dimas, SCE-owned streetlights represented about 78% of the kWh for municipal uses at 1,453,310 kWh.

Table 17: City of San Dimas Municipal Electricity Use, 2006

Buildings & Facilities	2006 Annual kWh	Percentage of 2006 Total kWh
Non-Demand Rated (GS-1,TOU-GS-1)	256,350	7%
Demand Rated (GS-2, TOU-GS-3-A)	1,696,200	44%
Total Buildings & Facilities	**1,952,550**	**51%**
Lighting	**2006 Annual kWh**	**Percentage of 2006 Total kWh**
SCE-Owned Streetlights (LS-1)	1,453,310	38%
City-Owned Streetlights (LS-2, LS-3)	227,420	6%
Traffic Lights (TC-1)	194,440	5%
Total Lighting	**1,875,170**	**49%**
Total All Municipal Accounts	**3,827,720**	**100%**

The goal of identifying baseline and current year energy use is to better understand how the City uses electricity and identify opportunities to further reduce energy use at City facilities. **Figure 18** compares the City's 2006 electricity use to 2010 data and provides a breakdown of the types of activities in which that electricity is used. Between 2006 and 2010, the City's municipal electricity use declined approximately 12%.

Figure 18: City of San Dimas Municipal Electricity Use by Rate Structure



The top ten municipal electricity users by account are provided in **Table 18**. Between 2006 and 2010, seven out of ten facilities had a decrease in electricity use. The largest decrease between 2006 and 2010 was in electricity used at the Swim and Racquet Club accounting for a 27% drop. Significant changes were also seen at the Horsethief

Dog Park and the San Dimas Sports Complex. SCE-owned streetlights, the top electricity user in both years, had a slight decrease in electricity use, but a large increase in cost. This uncorrelated pattern is due to SCE's yearly escalating rates for LS-1 streetlighting.

Table 18: City of San Dimas Top 10 Electricity Users by Account, 2006–2010

Rank	Facility	2006 Annual kWh	2010 Annual kWh	% Change in kWh (2006-2010)	2006 Annual Cost	2010 Annual Cost	% Change in Cost (2006-2010)
1	**SCE-Owned Streetlights (LS-1)** - City-wide	1,453,310	1,450,510	0%	$382,830	$450,580	18%
2	**City Hall** - 245 E Bonita Ave.	475,440	455,810*	-4%	$72,590	$68,990	-5%
3	**Swim and Racquet Club** - 990 W Covina Blvd.	455,790	331,320	-27%	$62,340	$45,700	-27%
4	**City-Owned Streetlights, Unmetered (LS-2)** - City-wide	208,580	219,100	5%	$21,910	$23,680	8%
5	**Traffic Signals** - City-wide	194,440	178,280	-8%	$25,090	$26,490	6%
6	**Canyon Country Golf Course and Club House** - 2100 Terrebonne Ave.	190,680	170,640	-11%	$30,650	$29,000	-5%
7	**Horsethief Canyon Dog Park** - 301 1/2 Horsethief Road	183,000	153,840	-16%	$32,310	$29,310	-9%
8	**Senior Citizen/Community Center** - 201 E Bonita Ave.	157,740	139,500	-12%	$25,630	$25,170	-2%
9	**San Dimas Sportsplex** - 763 W Cypress Ave	109,050	125,440	15%	$28,660	$47,910	67%
10	**Maintenance Yard** - 301 S Walnut Ave.	71,100	65,720	-8%	$13,140	$12,410	-6%

** July 2011 through June 2012 bills used as a proxy*

CHAPTER 4

ELECTRICAL ENERGY EFFICIENCY STRATEGY

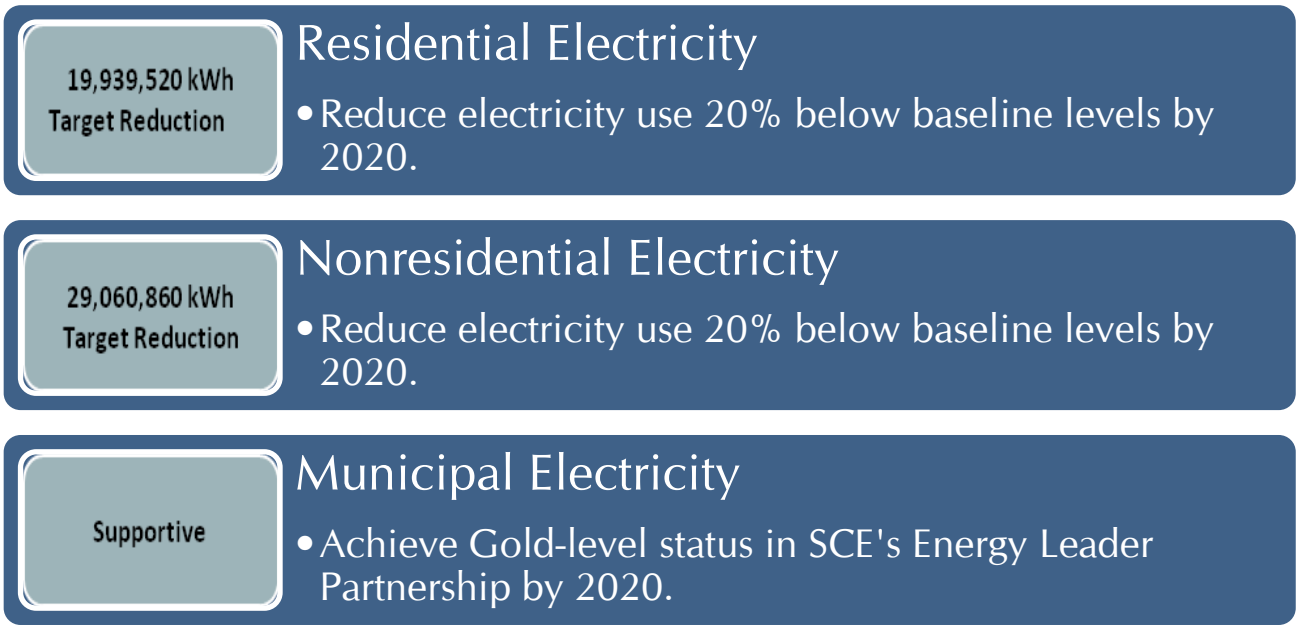
REDUCTION TARGETS

The City of San Dimas identified key energy efficiency targets that support the goals of the Energy Leader Partnership (ELP) and local planning priorities. Consistent with the targets of the California Public Utility Commissions (CPUC's) Long Term Energy Efficiency Strategic Plan (CEESP) (refer to **Chapter 1**, **Figure 1**), the focus of this plan is on electricity efficiency. Electricity efficiency also provides the added benefit of reducing greenhouse gas (GHG) emissions.

Accordingly, the Electrical Energy Action Plan (EEAP) also presents the State-recommended GHG reduction target of 15% below baseline emissions levels by 2020 as a supportive target. This approach equips the City to understand the relative impact of electricity efficiency within the overall regulatory guidance related to GHG emissions.

In addition to the State-recommended reduction target of 15% below baseline GHG emissions, this chapter presents an electricity reduction target for each electricity sector, that were developed through this planning process and are shown in **Figure 19**. Each reduction target is supported by a series of goals, policies, and actions.

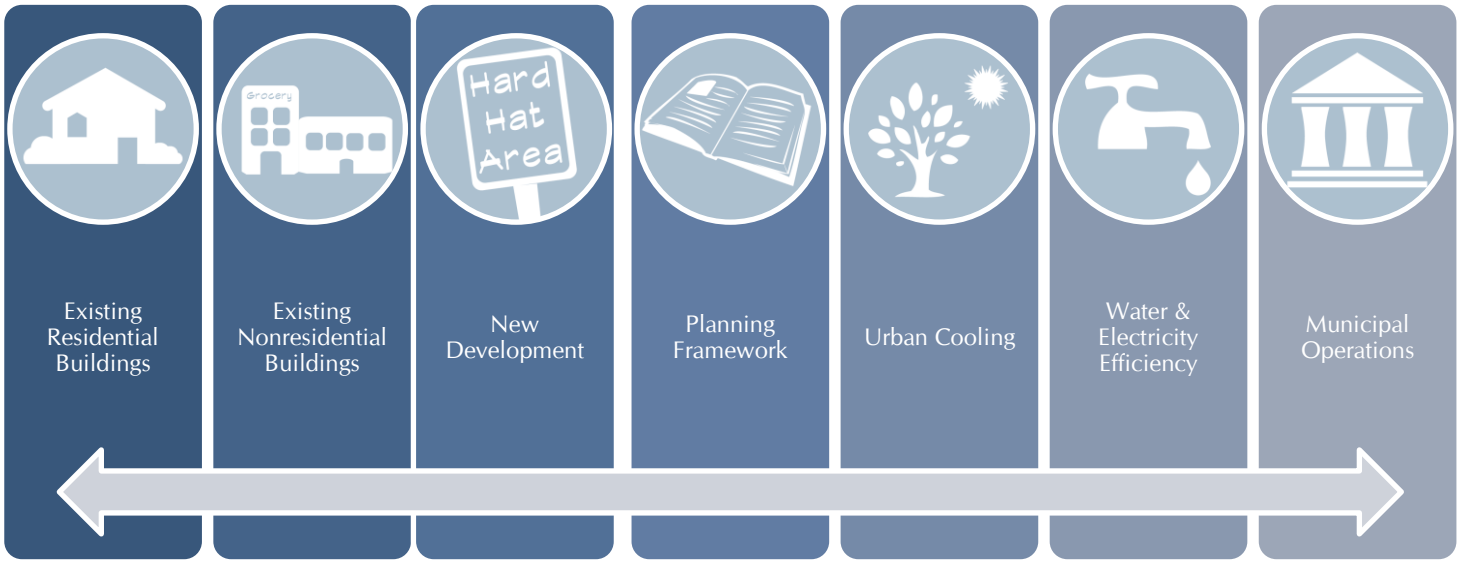
Figure 19: San Dimas's Energy Efficiency Targets



Strategy Structure

In order to achieve the target electricity reductions by 2020, the City of San Dimas will need to implement the goals, policies, and actions set forth in this chapter. The City's strategy is structured around seven key topic areas, as depicted in **Figure 20**.

Figure 20: Energy Efficiency Strategy Topic Areas



Each topic area includes corresponding goals, policies, and supporting actions that are necessary for successful implementation. Together, the goals, policies, and actions provide the City's "strategy" to achieve the electricity efficiency targets of this EEAP. Each piece has a unique function, but they work together collectively to reduce electricity use.

- Goal: The desired end state or expected outcome related to electricity reductions. Each goal corresponds to one of the identified topic areas.
- Policy: A statement that guides decision-making and indicates a commitment to achieve the specified outcomes of the goal. Policies provide the foundation for quantification of electricity reduction potentials.
- Implementation Action: An action, procedure, program, or strategy to achieve the electricity reductions of a policy. Action items may provide interim steps or supporting strategies and the range of opportunities to increase the electricity reduction potential of a policy.

POLICY CRITERIA AND EVALUATION

Each policy is assessed for its reduction of electricity use in government operations or community activities. In addition to electricity reductions, this EEAP also identifies estimated costs, savings, responsibility for implementation, and additional benefits, or co-benefits, resulting from the implementation of each policy. (Refer to **Chapter 5**, **Table 1** for a policy summary and associated implementation details. See **Appendix C** for detailed methods and sources of quantified policies.) This assessment recognizes the broad value of electricity efficiency for the community and the City of San Dimas. Not only will electricity efficiency actions reduce utility bills, but also they provide an opportunity to improve the quality of homes and businesses, increase property values, improve the indoor comfort of buildings, and reduce ongoing maintenance costs. Actions in City government facilities also fulfill the City's requirements for participation in the ELP model, helping to qualify the City for additional financial incentives from Southern California Edison (SCE).

Electricity efficiency results from a change in operation, activity, or efficiency. In general, there are three primary methods for reducing electricity-related GHG emissions: (1) conservation, (2) greater efficiency, and (3) change in energy source.

Each policy in this chapter presents the following information:

- GHG reduction estimates, presented in ranges, for the year 2020
- kWh reduction estimates, presented in ranges, for the year 2020
- Co-benefits that will likely occur through the implementation of each policy or action

The baseline GHG inventory and forecast serve as the foundation for quantifying the City's policies. Activity data from the inventory, kilowatt-hours (kWh) of electricity, is combined with the performance targets and indicators identified in this EEAP to calculate the range of potential reduction benefit for each policy. Details on the assumptions, methods and citations used in the electricity reduction quantifications can be found in **Appendix C**.

COMMUNITY-WIDE ELECTRICITY ENERGY EFFICIENCY STRATEGIES

The following goals, policies, and actions are aimed to reduce electricity use within the community.

GOAL 1: IMPROVE RESIDENTIAL BUILDING FUNCTION AND COMFORT WHILE REDUCING HOUSEHOLD ENERGY COSTS.

POLICY 1.1: IDENTIFY EXISTING RETROFIT PROGRAMS AND CREATE NEW PROGRAMS TO FACILITATE VOLUNTARY RESIDENTIAL ENERGY EFFICIENCY IMPROVEMENTS.

Actions:

- Encourage residents to participate in Southern California Edison-funded retrofit programs such as Energy Upgrade California.
- Support programs that provide funding of residential energy audits for representative building types to highlight energy efficiency opportunities that can be applied to similar properties throughout the community.

POLICY 1.1

2020 kWh Reduction:

6,558,500 to 19,417,800

2020 $MTCO_2e$ Reduction:

2,340 – 6,940

Co-Benefits:

Provides Permanent Energy Reduction, Reduces Peak Energy Demand, Reduces Monthly Utility Costs, Improves Indoor Environmental Quality, Supports Local Economy & Job Creation, Supports Community Education

POLICY 1.2: HOST CONTRACTOR, YOUTH, AND HOMEOWNER EDUCATION AND TRAINING EVENTS TO SUPPORT THE DEVELOPMENT OF AN ENERGY-EFFICIENT COMMUNITY.

- Promote the development of the local workforce by supporting contractor training and certification for energy efficiency retrofits, including Building Performance Institute training, or other electricity efficiency workforce development programs.
- Continue to provide energy efficiency information on the City's website and materials at City Hall and city events to promote energy efficiency improvements in partnership with the San Gabriel Valley Energy Wise Program and similar local and regional programs.

POLICY 1.2

2020 kWh Reduction:

397,290 to 893,900

2020 $MTCO_2e$ Reduction:

140 - 320

Co-Benefits:

Supports Local Economy & Job Creation, Supports Community Education

POLICY 1.3: COLLABORATE WITH OWNERS OF HISTORIC BUILDINGS TO IMPROVE THE ENERGY EFFICIENCY OF HISTORIC PROPERTIES WHILE MAINTAINING THE CHARACTER AND INTEGRITY OF THE BUILDING.

POLICY 1.3

2020 kWh Reduction:

227,500 – 1,435,000

2020 $MTCO_2e$ Reduction:

80 – 510

Co-Benefits:

Provides Permanent Energy Reduction, Supports Community Education, Reduces Monthly Utility Costs

Actions:

- Collaborate with property owners to disseminate information regarding energy efficiency upgrades and retrofits appropriate for historic buildings through brochures, websites, and other outreach tactics.
- Provide information about appropriate energy efficiency measures for historic properties.
- Identify historic building typologies (Queen Anne, Colonial Revival, Craftsman, Spanish Colonial, etc.) for energy audits on select building types and identify energy efficiency upgrades most appropriate for each building type.
- Maximize energy efficiency through implementation of the Town Core Design Guidelines by incorporating energy efficiency standards into the guidelines.
- Create incentives such as an expedited and streamlined plan review process for building permit applications to complete energy efficiency upgrades and building repairs consistent with the Secretary of the Interior Standards for Rehabilitation.
- Revise the City's Mills Act Historic Property Preservation Agreement Application to encourage property owners to identify projects that maintain the historic integrity of the building while improving energy efficiency.
- Utilize the Walker House to highlight rehabilitation efforts that can also improve the energy efficiency of the historic building.

POLICY 1.4: REDUCE ENERGY USE AND PLUG-LOAD DEMAND THROUGH UPGRADES TO HOUSEHOLD APPLIANCES AND EQUIPMENT.

POLICY 1.4

2020 kWh Reduction:

144,160 – 428,470

2020 $MTCO_2e$ Reduction:

50 – 150

Co-Benefits:

Provides Permanent Energy Reduction, Reduces Peak Energy Demand, Reduces Monthly Utility Costs, Supports Community Education

Actions:

- Work with Southern California Edison (SCE) to promote existing energy efficiency rebate offerings for appliances, heating and ventilation equipment, and lighting fixtures by providing education and outreach materials for residential users.
- Promote the use of smart-grid-integrated appliances that are energy efficient

GOAL2: SUPPORT THE BUSINESS COMMUNITY'S EFFORTS TO IMPLEMENT ENERGY EFFICIENCY PRACTICES AND OPERATIONS.

POLICY 2.1: WORK WITH THE BUSINESS COMMUNITY TO INTEGRATE ENERGY EFFICIENCY INTO BUSINESS PLANS AND DAILY OPERATIONS.

- Work with SCE to promote existing energy efficiency rebate offerings for appliances, heating and ventilation equipment, and lighting fixtures by providing education and outreach materials for nonresidential users.
- Partner with the San Dimas Chamber of Commerce by presenting at its regular meetings to highlight available conservation actions and energy efficiency programs to business and property owners.
- Update the City's Small Business Development Guide to include resources and guidance for new or expanded energy-efficient practices.
- Continue to disseminate information regarding energy efficiency opportunities for businesses through the City's website.
- Work with SCE to encourage building and facility managers to use energy monitoring programs that inform energy use decisions and reduce peak energy demand, such as SCE's Demand Response Program.

POLICY 2.1

2020 kWh Reduction:

Supportive

2020 $MTCO_2e$ Reduction:

Supportive

Co-Benefits:

Provides Permanent Energy Reduction, Reduces Peak Energy Demand, Reduces Monthly Utility Costs, Supports Local Economy & Job Creation, Supports Community Education

POLICY 2.2: FACILITATE RETROFITS AND ENERGY EFFICIENCY IMPROVEMENTS WITHIN THE NONRESIDENTIAL BUILDING STOCK.

- Work with Los Angeles County and other regional public or private entities to create a revolving loan fund to support nonresidential retrofits that are not covered by utility rebates or other existing incentives.
- Provide education and outreach to commercial property owners on the benefits of complying with state requirements such as Title 24 on energy disclosure at the time of sale or lease of nonresidential property.
- Highlight energy-efficient practices implemented by local businesses as case studies to the community.

POLICY 2.2

2020 kWh Reduction:

5,415,840 to 20,390,050

2020 $MTCO_2e$ Reduction:

2,110 to 7,940

Co-Benefits:

Reduces Peak Energy Demand, Reduces Monthly Utility Costs, Permanent Energy Reduction, Reduces Maintenance Costs

GOAL 3: MAXIMIZE THE ENERGY EFFICIENCY OF NEW BUILDINGS.

POLICY 3.1: WORK WITH PROJECT APPLICANTS TO MAXIMIZE THE ENERGY-EFFICIENT DESIGN AND ORIENTATION OF NEW BUILDINGS.

POLICY 3.1

2020 kWh Reduction:

1,700 – 5,280

2020 $MTCO_2e$ Reduction:

< 10

Co-Benefits:

Provides Permanent Energy Reduction, Reduces Monthly Utility Costs, Supports Community Education

Actions:

- Work with project applicants to develop energy-efficient buildings that comply with the Town Core Design Guidelines.
- Support the use of innovative and alternative building materials such as cool roof materials and heat-reflective paints and designs that improve energy efficiency when they do not conflict with community design guidelines or compromise Town Core character.
- Support local green building organizations such as the Los Angeles chapter of the US Green Building Council to provide training and workshops.
- Encourage project applicants to participate in SCE's "Savings by Design" Program.

POLICY 3.2: IDENTIFY OPPORTUNITIES TO SUPPORT THE INTEGRATION OF ENERGY EFFICIENCY UPGRADES AS PART OF BUILDING REMODELS OR TENANT IMPROVEMENTS.

POLICY 3.2

2020 kWh Reduction:

58,020 – 564,050

2020 $MTCO_2e$ Reduction:

20 – 210

Co-Benefits:

Supports Community Education, Provides Permanent Energy Reduction, Reduces Monthly Utility Costs, Supports Local Economy & Job Creation

Actions:

- Continue to share resources and materials such as the Green Building Remodeling Guides on the City's website and at the Planning and Building public counter.

POLICY 3.3: ENCOURAGE THE USE OF ENERGY-EFFICIENT APPLIANCES AND EQUIPMENT IN NEW BUILDINGS.

Actions:

- Encourage all size developments to install energy-efficient appliances within new and renovated buildings.
- Prioritize the implementation of energy efficiency related mitigation measures for new projects with potentially significant GHG emissions impacts.

POLICY 3.3

2020 kWh Reduction:

418,390 – 1,075,110

2020 $MTCO_2e$ Reduction:

160 – 410

Co-Benefits:

Provides Permanent Energy Reduction, Reduces Monthly Utility Costs, Supports Local Economy & Job Creation, Supports Community Education

POLICY 3.4: PARTICIPATE IN A REGIONAL EFFORT TO IMPLEMENT ENERGY EFFICIENCY STANDARDS FOR NEW DEVELOPMENT.

Actions:

- Collaborate with the San Gabriel Valley Energy Wise Partnership and the Los Angeles Chapter of the US Green Building Council to provide local training and workshops for energy-efficient building opportunities.
- Work with San Gabriel Valley cities involved in the energy action planning process to identify the most effective options to achieve energy efficiency in new development. Confirm the feasibility of adopting regionally consistent, mandatory standards for new development energy efficiency standards, such as adoption of Los Angeles County's green building code.

POLICY 3.4

2020 kWh Reduction:

Supportive

2020 $MTCO_2e$ Reduction:

Supportive

Co-Benefits:

Provides Permanent Energy Reduction, Supports Local Economy & Job Creation, Supports Community Education

GOAL 4: DEVELOP A PLANNING FRAMEWORK TO PROVIDE ONGOING SUPPORT FOR ENERGY EFFICIENCY AND THE LOCAL ECONOMY.

POLICY 4.1: IDENTIFY FUNDING OPPORTUNITIES AND FINANCING PROGRAMS TO SUPPORT COMMUNITY ENERGY EFFICIENCY UPGRADES AND RETROFITS.

POLICY 4.1

2020 kWh Reduction:

Supportive

2020 $MTCO_2e$ Reduction:

Co-Benefits:

Supportive

Supports Community Education, Supports Local Economy & Job Creation

Actions:

- Work with the San Gabriel Valley Council of Governments and other cities to pursue regional funding as available for residential audits and/or retrofits.
- Pursue grants or other financial sources to fund home retrofits.
- Identify local credit unions and financial institutions to underwrite loans that support energy efficiency upgrades and investment in the local economy as a component of an implementation plan.
- Encourage nonresidential property owners to participate in the Los Angeles County Property Assessed Clean Energy financing program to improve the energy efficiency of their facilities.

POLICY 4.2: PROVIDE EDUCATIONAL OPPORTUNITIES AND RECOGNIZE BEST PRACTICES TO SUPPORT ENERGY-EFFICIENT BEHAVIORS AND PRACTICES.

POLICY 4.2

2020 kWh Reduction:

Supportive

2020 $MTCO_2e$ Reduction:

Co-Benefits:

Supportive

Supports Community Education, Supports Local Economy & Job Creation

Action:

- Collaborate with other energy efficiency organizations to develop an energy efficiency awards program to recognize and award prizes to homeowners that have achieved energy efficiency improvements in their homes to market opportunities to the community.

GOAL 5: OPTIMIZE SHADING AND COOLING TO REDUCE COMMUNITY-WIDE ENERGY DEMAND.

POLICY 5.1: ENHANCE AND PROTECT THE COMMUNITY'S URBAN FOREST TO MAXIMIZE THE ENERGY EFFICIENCY BENEFITS OF TREE SHADING AND COOLING.

POLICY 5.1

2020 kWh Reduction:

125,990 – 1,185,690

2020 $MTCO_2e$ Reduction:

50 – 450

Co-Benefits:

Reduces Peak Energy Demand, Reduces Urban Air Temperatures, Supports Community Education

Actions:

- Maintain the City's designation from the National Arbor Day Foundation as a Tree City U.S.A.
- Highlight the energy conservation benefits of the City's tree preservation ordinance and heritage tree designations.
- Utilize the community forestry management plan to identify additional opportunities to plant trees within the public right-of-way.
- Continue to provide maintenance and planting resources to the community.
- Coordinate with other regional conservation organizations to convert the City's Tree Trek Map into a web or mobile application that identifies heritage trees, provides resources on proper tree maintenance and planting, and allows the community to add trees to the City's tree inventory database.

POLICY 5.2: MAXIMIZE THE USE OF COOL ROOFS AND SURFACES TO REDUCE BUILDING ENERGY USE.

POLICY 5.2

2020 kWh Reduction:

286,610 – 674,360

2020 $MTCO_2e$ Reduction:

110 – 250

Co-Benefits:

Reduces Peak Energy Demand, Reduces Urban Air Temperatures, Supports Community Education

Actions:

- Promote cost-effective opportunities to residents and business owners to install cool roofs, light-colored paved surfaces, and permeable pavement.
- Provide incentives to energy-efficient ambassadors and community organizations to lead cool roof "work days" to repaint traditional roofs at schools or public facilities with cool paint materials.
- When cost-effective, use cool-colored and permeable pavement in City construction projects.

GOAL 6: ENCOURAGE WATER CONSERVATION IN NEW AND EXISTING DEVELOPMENT TO SUPPORT COMMUNITY ENERGY EFFICIENCY AND CONSERVATION GOALS.

POLICY 6.1

2020 kWh Reduction:

1,542,020 – 1,713,360

2020 $MTCO_2e$ Reduction:

580 – 650

Co-Benefits:

Conserves Water, Reduces Monthly Utility Costs, Supports Community Education

POLICY 6.1: WORK WITH THE CITY'S WATER PROVIDER TO IDENTIFY THE ANTICIPATED WATER SAVINGS FROM THE IMPLEMENTATION OF ADDITIONAL TIERED WATER RATES, WATER DELIVERY SYSTEM UPGRADES, AND OTHER WATER EFFICIENCY PROJECTS.

Actions:

- Collaborate with the City's water provider, currently Golden State Water Company (GSWC), to highlight the water-energy relationship in future updates to the Urban Water Management Plan.
- Highlight the GSWC Demonstration Garden as a model for water-efficient landscaping and the water savings achieved.
- Promote and distribute GSWC's water efficiency kits and appliances and Southern California Edison's energy efficiency kit, which includes low-flow showerheads and faucet aerators, by providing educational and outreach materials in an energy efficiency kiosk and at the front counter.

POLICY 6.2

2020 kWh Reduction:

1,272,700 – 1,414,110

2020 $MTCO_2e$ Reduction:

180 – 200

Co-Benefits:

Conserves Water, Reduces Monthly Utility Costs, Supports Community Education & Engagement

POLICY 6.2: SUPPORT WATER-EFFICIENT LANDSCAPING TO REDUCE THE ELECTRICITY DEMAND FOR WATER TRANSPORT AND TREATMENT.

- Utilize the model energy efficiency code to encourage drought-tolerant landscaping and the use of water-efficient irrigation systems.
- Renovate irrigation controllers to conserve water in street medians to reduce kWh usage.
- Share promotion with the Golden State Water Company to highlight additional water-wise landscaping workshops and demonstrations on partner organizations' websites.

MUNICIPAL ELECTRICITY ENERGY EFFICIENCY STRATEGIES

GOAL 7: REDUCE MUNICIPAL ENERGY USE 10% FROM 2004 LEVELS TO ACHIEVE GOLD-LEVEL STATUS IN SCE'S ENERGY LEADER PARTNERSHIP PROGRAM AND QUALIFY FOR ADDITIONAL INCENTIVES.

NEAR-TERM PROJECTS

A key objective of this EEAP is to identify prioritized, actionable, turnkey strategies and projects. The EEAP also identifies future opportunities for municipal energy efficiency projects. In order to evaluate potential energy

efficiency projects, the City conducted audits at several key facilities, reviewed audit results and opportunities at other facilities, and identified near-term projects to be implemented.

The City has conducted audits that include near-term energy efficiency projects (listed below) and is in the process of auditing the Senior Center, Swim and Racquet Club, Golf Course, SportPlex, and Walker House. The City has committed to prioritizing the implementation of projects with a payback period of ten years or less, which are identified in **Table 19.** Based on the payback period, annual cost savings, and reductions in both electricity use and GHG emissions, the City believes that these priority short-term actions will help the City advance toward ELP targets and long-term energy efficiency objectives.

Table 19: Near-Term Energy Efficiency Projects[1]

Address	Energy Efficiency Measure	Electricity Savings (kWh/yr)	Utility Savings ($/yr)	Estimated Project Cost	SCE Incentive ($)	Payback (yrs)	Funding Opportunities
Walker House	HVAC Scheduling	2,720	$ 1,080	$-	$594	0	So CalRec, CEC loans
SportsPlex	Lighting Controls Refurbishment	-	$ 8,425	$ 2,000	$ -	0	So CalRec, CEC loans
Golf Course	HVAC Scheduling	4,750	$800	$-	$450	0	So CalRec, CEC loans
Swim & Racquet Club	Install VFD controls on 5-hp pool pump	8,883	$ 1,386	$ 1,386	$438	0.3	So CalRec, CEC loans
Swim & Racquet Club	Vending Misers	2,710	$350	$ 500	$140	1.0	So CalRec, CEC loans
Walker House	Lighting Retrofit	15,400	$300	$ 5,000	$1,710	1.0	So CalRec, CEC loans
Golf Course	Clubhouse Lighting Retrofit	29,400	$ 4,700	$ 7,000	$2,050	1.0	So CalRec, CEC loans
Senior Center	HVAC Upgrades	24,400	$ 6,800	$ 20,000	$5,200	2.0	So CalRec, CEC loans
Swim & Racquet Club	Lighting Retrofit	35,200	$ 4,500	$ 12,000	$2,300	2.0	So CalRec, CEC loans
SportsPlex	Outdoor Lighting Retrofit: Metal halide to LED lights	105,978	$43,451	$ 200,000	$27,463	4.0	So CalRec, CEC loans
Walker House	Second Floor Economizer	6,470	$ 1,650	$ 6,530	$580	4.0	So CalRec, CEC loans
Senior Center	Lighting Retrofit	15,000	$ 2,700	$ 18,000	$1,000	6.0	So CalRec, CEC loans
Golf Course	Economizer	1,210	$200	$ 2,000	$110	9.0	So CalRec, CEC loans

Address	Energy Efficiency Measure	Electricity Savings (kWh/yr)	Utility Savings ($/yr)	Estimated Project Cost	SCE Incentive ($)	Payback (yrs)	Funding Opportunities
Swim & Racquet Club	Replace existing 2-ton package AC units with high SEER rating package units	3,965	$618	$ 6,000	$6,000	9.4	So CalRec, CEC loans
Golf Course	Packaged Unit Replacement	15,800	$ 2,500	$ 31,300	$ -	13.0	So CalRec, CEC loans
Swim & Racquet Club	Packaged Heat Pump Replacement	8,000	$ 1,000	$ 20,000	$ -	20.0	So CalRec, CEC loans
City-wide	Streetlight retrofits of City-owned lighting fixtures	TBD[2]	TBD[2]	TBD[2]	TBD[2]	TBD[2]	So CalRec, CEC loans
City Hall	Plug load sensors	TBD[2]	TBD[2]	TBD[2]	$715	TBD[2]	So CalRec, CEC loans
Swim & Racquet Club	Retrofit linear fluorescent fixtures from T12 to T8 high efficiency fixtures	16,514	$ 2,477	$ 3,000	$826	TBD[2]	So CalRec, CEC loans
	TOTAL	**296,400**	**82,937**	**334,716**	**49,575**	**4**	

1 Baseline year is 2006.

2 To be determined. At the time of report preparation, estimated energy and GHG reductions were unavailable. The SGVCOG and SCREC are working to confirm project information.

Long-Term Municipal Policies

In addition to the near-term projects, the City has identified additional policies and programs to be implemented in the next eight years to achieve a 10% reduction in electricity use below 2004 electricity levels at City facilities. The City's General Plan is an important document that helps guide the growth and development of the city. By incorporating energy efficiency and other sustainable practices into the General Plan, the City can ensure that such measures are consistently incorporated into plans, programs, policies, and development within the city.

POLICY 7.1: LEAD THE COMMUNITY BY EXAMPLE THROUGH PILOTING COST-SAVING ENERGY MANAGEMENT PRACTICES.

Actions:

- Work with the SGVCOG to prepare an energy information display that highlights the energy and cost savings achieved through the implementation of projects at City facilities and how they can be applied to residential buildings and businesses.
- Conduct energy benchmarking on a regular basis and share results and improvements through the City's website and publications.

- Participate in the SGVCOG's utility manager program, the Enterprise Energy Management Information System (EEMIS), to regularly track energy use and identify cost-saving opportunities through sub-metering and energy management.

POLICY 7.2: IMPLEMENT AN ENERGY-EFFICIENT PROCUREMENT POLICY TO ENSURE THE PURCHASE OF EFFICIENT EQUIPMENT THAT WILL RESULT IN ENERGY COSTS SAVINGS THAT OUTWEIGH ADDITIONAL UPFRONT COSTS.

Actions:

- Work with the SGVCOG, the Southern California Regional Energy Center (SCREC), and regional partners to encourage development of regional mechanisms to finance bulk-purchasing efforts building on the SCREC's efforts for municipal bulk purchasing and to reduce the costs of energy-efficient appliances.
- Integrate proper energy efficiency maintenance recommendations for appliances and equipment into the energy-efficient procurement policy.

POLICY 7.3: IDENTIFY ADDITIONAL OPPORTUNITIES TO IMPROVE THE ENERGY EFFICIENCY OF CITY FACILITIES.

Actions:

- Complete audits at all City facilities.
- Identify cost-effective projects with a payback period of less than four years to reduce electricity at City facilities.
- Set aside municipal savings from energy efficiency projects to fund additional energy efficiency projects.
- Highlight and share energy efficiency projects and savings from energy efficiency projects.
- Participate in Los Angeles County's regional loan program to fund energy efficiency projects.

POLICY 7.4: WORK WITH THE SGVCOG TO USE REGIONAL PARTNERS FOR CREATION OF AN ENERGY MANAGEMENT POSITION TO TRACK ENERGY USE AT CITY FACILITIES, IDENTIFY OPPORTUNITIES FOR EFFICIENCIES AND COST SAVINGS, AND IMPLEMENT ENERGY EFFICIENCY PROJECTS.

Action:

- Continue to support City staff participation in regional planning efforts and trainings related to energy efficiency.

ENERGY EFFICIENCY SUMMARY

This EEAP identifies a clear path for San Dimas to achieve the community-wide electricity reduction targets of 20% below 2006 levels for both residential and nonresidential uses. **Figures 21** and **22** identify the low and high estimates for both kWh and $MTCO_2e$ reductions to be achieved by 2020.

Figure 21: Estimates 2020 kWh Savings by Goal

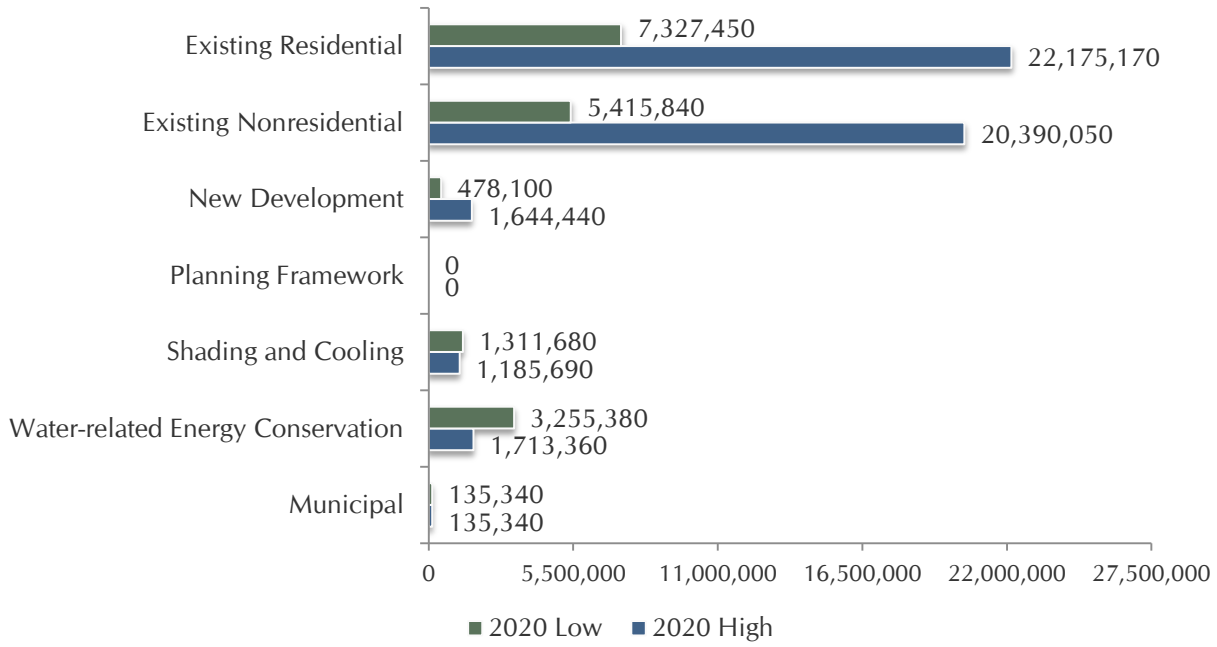
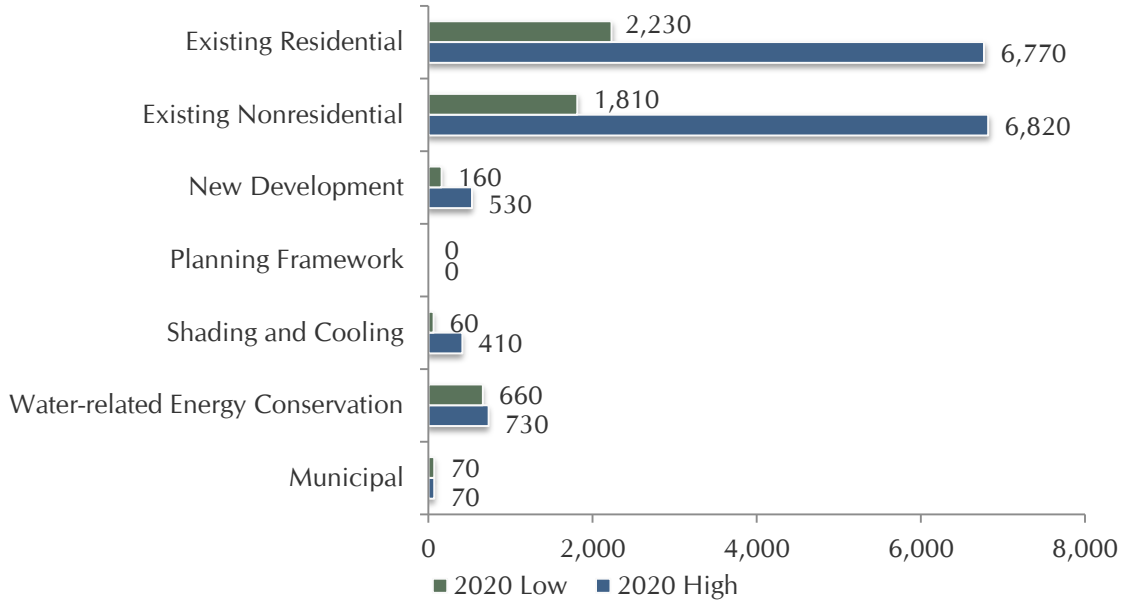


Figure 22: Estimates 2020 $MTCO_2e$ Savings by Goal



CHAPTER 5

IMPLEMENTATION

This chapter outlines a path for San Dimas to implement the strategies described in this Electrical Energy Action Plan (EEAP) and monitor overall progress toward achieving the EEAP reduction targets.

The EEAP implementation will require City leadership to execute strategies and report on the progress of implementation. This Plan identifies the responsible department for each policy and offers time frames and plan-level cost estimates for implementing each strategy. Lastly, successful implementation requires regular monitoring and reporting. City staff should monitor the progress on implementing the EEAP on an annual basis and report to the City Council on EEAP progress each year.

San Dimas will work with the San Gabriel Valley Council of Governments (SGVCOG), the San Gabriel Valley Energy Wise Partnership (SGVEWP), and other partners as appropriate, such as Los Angeles County, the Los Angeles Regional Collaborative (LARC), and the Southern California Regional Energy Center (SCREC), to identify effective procedures to track the status of energy efficiency projects without increasing the level of effort from existing City staff. A designated City staff lead will monitor Plan implementation and will support ongoing regional collaboration. The City staff lead will participate in the identification of regional resources available to support and streamline the implementation process.

IMPLEMENTATION

Crucial to the implementation of this Plan will be the City's implementation program. The implementation program identifies the anticipated electricity savings, GHG reduction, agency, or department responsible for implementation, starting time frame, and co-benefits.

MONITORING AND UPDATING THE EEAP

San Dimas will consider the following suggested implementation policies and determine how to best implement, track, monitor, and update the EEAP. As the City reports on progress in implementing the EEAP, staff will evaluate the effectiveness of each policy to ensure that the anticipated electricity and GHG reductions are occurring. In the event that GHG reductions do not occur as expected, San Dimas will be able to modify and add further policies to the EEAP to ensure the City meets its reduction target.

IMPLEMENTATION POLICY 1: ANNUALLY MONITOR AND REPORT THE CITY'S PROGRESS TOWARD ACHIEVING THE REDUCTION TARGET.

Actions:

- Facilitate implementation of measures and actions related to municipal operations.
- Prepare an annual progress report for review and consideration by the City Council.
- Utilize the monitoring and reporting tool to assist with annual reports.
- Identify key staff responsible for annual reporting and monitoring.

IMPLEMENTATION POLICY 2: REGULARLY REVIEW AND UPDATE THE CITY'S GHG INVENTORY, ENERGY PROFILE, AND EEAP.

Actions:

- Review of electricity usage and associated GHG emissions at regular intervals of at least once every two years.
- Re-inventory community-wide and municipal GHG emissions every three to five years.
- Update the Plan to incorporate new technology, programs, and policies as available to achieve electricity efficiency.
- Consider updating and amending the Plan, as necessary, should the City find that policies and actions are not meeting the intended electricity reductions.
- When City resources are available, integrate the EEAP into a comprehensive climate action plan or GHG reduction plan to incorporate GHG and energy/fuel reduction targets to address energy supply, natural gas demand, transportation, waste, wastewater, and other sectors as applicable.

IMPLEMENTATION POLICY 3: CONTINUALLY DEVELOP COLLABORATIVE PARTNERSHIPS THAT SUPPORT IMPLEMENTATION OF THE EEAP.

Actions:

- Continue collaboration with the SGVCOG and participation as an active member of the SGVEWP and the Energy Environment and Natural Resources Committee through participation in meetings, appointment of council members to committees, and other participation efforts.

- Participate in other SGVCOG-sponsored programs, projects, and events to help meet the goals described in this EEAP.

IMPLEMENTATION POLICY 4: ACTIVELY SUPPORT REGIONAL FUNDING EFFORTS TO IMPLEMENT THE EEAP.

Actions:

- Work with the SGVCOG to identify regional funding sources to support policies in this EEAP.
- Pursue local, regional, state, and federal grants as appropriate to support implementation.

IMPLEMENTATION AND MONITORING TOOLS

MONITORING CALCULATOR AND REPORTING TEMPLATE

To determine whether San Dimas is on track to meet the adopted target, it is important that the City monitor implementation progress on a regular basis and identify whether the policies as implemented are achieving their intended reductions or if additional policies will need to be implemented to meet the target.

The implementation and financial metrics identified in this EEAP have been calculated using an Excel-based workbook. This workbook calculates energy savings, GHG reductions, and financial costs and savings based on the key metrics identified in the Plan. These performance metrics include information such as the average energy reduction per household, the number of trees planted, or the square feet of facilities retrofitted.

To support City staff's reporting efforts on the progress of EEAP implementation, the workbook includes a reporting template and space for staff to enter the actual performance of each policy based on the key metrics identified. Once the information is entered for each year, updated energy savings, GHG reduction, and monetary costs or savings will be incorporated into the report template that can easily be exported and used to present EEAP progress to City advisory bodies, assist in annual fiscal budget planning, and highlight City and community success in reducing energy use through city newsletters and online media.

ENTERPRISE ENERGY MANAGEMENT INFORMATION SYSTEM

The SGVCOG is collaborating with Los Angeles County to implement the County's Enterprise Energy Management Information System (EEMIS) utility manager to track municipal energy usage, enabling participating San Gabriel Valley municipalities to access facility energy consumption, archive billing data, and report and analyze energy consumption data via the Internet. Los Angeles County's EEMIS project was developed in 2000. It has been adapted to assist cities in the SGVCOG with monitoring, forecasting, and budgeting for energy use at City facilities.

EEMIS includes the following components and features:

- Web-based application using browser-based technology.
- Collects data from all connected facilities and stores data in a standard format.
- Generates usage and demand profiles for the purpose of energy procurement and efficiency project identification.
- Provides utility bill data for the different department subtenants within a building based on prevailing rates or customized for modified rate schedule.

- Utilizes energy cost analysis and notifications based on user-defined parameters to control costs by gaining experience from similar usage facilities (based on area of facility, number of occupants, size of equipment, season, historical usage over user-defined periods, etc.).

Implementation Program

The information in this implementation program provides an overall, planning-level framework for achieving the reductions in this Plan. **Table 20** presents indicators for the implementation of each policy. These indicators represent the level of participation and energy reductions that would achieve the average range of the high and low electricity reductions in this Plan. The electricity metrics show the total number of participating households, nonresidential square footage, and energy reduction per participant necessary to achieve each policy's average reduction potential. Metrics for supportive policies are shown as "Supportive." **Appendix C** also presents the approach to quantification, including the analytical process for identifying appropriate regional reductions, costs, and financial benefits.

Table 20: Implementation Program Table

Policy	2020 Electricity Reductions (kWh)[1]	2020 Performance Targets	Participant Type	Average Reduction per Participant		Beginning Time Frame	Implementing Department
Policy 1.1: Identify existing retrofit programs and create new programs to facilitate voluntary residential energy efficiency improvements.	-12,988,150	2,760	Households	2,700	kWh/year	Mid-Term	Community Development and Public Works
		10	Households - Funded by City	2,700	kWh/year		
Policy 1.2: Host contractor, youth, and homeowner education and training events to support the development of an energy-efficient community.	-397,290	3,070	Households	200	kWh/year	Near-Term	Community Development
Policy 1.3: Collaborate with owners of historic buildings to improve the energy efficiency of historic properties while maintaining the character and integrity of the building.	-831,250	260	Historic Core Homes	2,700	kWh/year	Mid-Term	Community Development - Housing
Policy 1.4: Reduce energy use and plug-load demand through upgrades to household appliances and equipment.	-286,320	1,140	Single-family households	200	kWh/year	Mid-Term	Community Development
		270	Multi-family households	270	kWh/year		
Policy 2.1: Work with the business community to integrate energy efficiency into business plans and daily operations.	Supportive - Not Applicable					Mid-Term	Community Development

Policy	2020 Electricity Reductions (kWh)[1]	2020 Performance Targets	Participant Type	Average Reduction per Participant		Beginning Time Frame	Implementing Department
Policy 2.2: Facilitate retrofits and energy efficiency improvements within the nonresidential building stock.	-12,902,950	60	Businesses	88,110	kWh/year	Mid-Term	Community Development
Policy 3.1: Work with project applicants to maximize the energy-efficient design and orientation of new buildings.	-3,490	15	New Single-family households	170	kWh/year	Mid-Term	Community Development
		5	New Multi-family households	120	kWh/year		
Policy 3.2: Identify opportunities to support the integration of energy efficiency upgrades as part of building remodels or tenant improvements.	-311,040	100	Households	2,600	kWh/year	Long-Term	Community Development
Policy 3.3: Encourage the use of energy-efficient appliances and equipment in new buildings.	-746,750	3,810	New Single-family households	190	kWh/year	Near-Term	Community Development
		60	New Multi-family households	270	kWh/year		
Policy 3.4: Participate in a regional effort to implement energy efficiency standards for new development.	Supportive - Not Applicable					Long-Term	Community Development
Policy 4.1: Identify funding opportunities and financing programs to support community energy efficiency upgrades and retrofits.	Supportive - Not Applicable					Long-Term	Community Development
Policy 4.2: Provide educational opportunities and recognize best practices to support energy-efficient behaviors and practices.	Supportive - Not Applicable					Long-Term	Community Development
Policy 5.1: Enhance and protect the community's urban forest to maximize the energy efficiency benefits of tree shading and cooling.	-655,840	3,820	Households	40	kWh/year	Mid-Term	Community Development and Public Works
		110	Businesses	11,860	kWh/year		

Policy	2020 Electricity Reductions (kWh)[1]	2020 Performance Targets	Participant Type	Average Reduction per Participant		Beginning Time Frame	Implementing Department
Policy 5.2: Maximize the use of cool roofs and surfaces to reduce building energy use.	-480,490	3%	Percent of urban space	480,490	kWh Total	Mid-Term	Community Development and Public Works
Policy 6.1: Work with the City's water provider to identify the anticipated water savings from the implementation of additional tiered water rates, water delivery system upgrades, and other water efficiency projects.	-1,627,690	95%	Percent of water accounts	31,030	Gallons per Capita	Near-Term	Community Development
Policy 6.2: Support water-efficient landscaping to reduce the electricity demand for water transport and treatment.	-1,343,410	95%	Percent of water accounts	31,030	Gallons per Capita	Near-Term	Community Development
Policy 7.1: Lead the community by example through piloting cost-saving energy management practices.	Not Quantified	Not Quantified	City government	Not Quantified	Not Quantified	Long-Term	Administration
Policy 7.2: Implement an energy-efficient procurement policy to ensure the purchase of efficient equipment that will result in energy costs savings that outweigh additional upfront costs.	Not Quantified	Not Quantified	City government	Not Quantified	Not Quantified	Long-Term	Administration

CONTINUED PARTNERSHIP OPPORTUNITIES

One component to the successful implementation of San Dimas's EEAP will be the sharing of resources through continued communication and collaboration with other cities in the region. Continued collaboration will foster a more supportive environment to share best practices and potentially coordinate future requests for funding and/or implementation. Efforts to implement programs and policies on a regional scale will provide consistency in the energy efficiency market and leverage economies of scale. San Dimas will continue to participate in SGVCOG discussions and events related to energy efficiency such as the SGVEWP, the Energy Environment and Natural Resource Committee, and other SGVCOG-sponsored events to help meet the goals described in this EEAP.

CHAPTER 6

CONCLUSION

This Electrical Energy Action Plan (EEAP) is an opportunity for the City to create and achieve a long-term vision for energy efficiency. The City of San Dimas has developed this EEAP as part of a regional framework that allows for close coordination and consistency between communities in the San Gabriel Valley, while responding to local community characteristics, values, and planning frameworks. The City recognizes the tremendous value of energy efficiency as a tool to support local values and objectives.

The policies and actions in this Plan are meant to serve as a road map for reducing electricity use in the community and municipal facilities. Building on the foundation of electricity reductions, the Plan also helps the City improve the quality of the existing built environment, reduce household costs, and enhance the spending power of local businesses. Energy efficiency allows the community of San Dimas to protect limited resources while more effectively powering the community. While the primary focus of this Plan is on reducing electricity and related GHG emissions, the policies and actions in this Plan also provide the ancillary benefits of improving the quality of the local built environment, maintaining air quality, preserving and enhancing natural spaces in the community, and stimulating the local economy through investments in energy efficiency.

GLOSSARY OF KEY TERMS

Adjusted Business-as-Usual (ABAU) Forecast

An emissions forecast that accounts for actions and legislation implemented by the state of California to reduce greenhouse gas emissions statewide that will also have a measureable beneficial impact for local jurisdictions' emissions.

Advanced Lighting Technologies

Components and systems with improved performance attributes that contribute toward efficiency enhancement and best practices. Examples (in 2010) include specialty CFLs, LEDs, cold cathode and high-efficiency incandescents.

Source: California Long Term Energy Efficiency Strategic Plan

American Recovery and Reinvestment Act (ARRA)

Commonly referred to as the Stimulus Plan or Recovery Act, ARRA is an economic stimulus package enacted by the federal government in 2009. The intent of the stimulus is to create jobs and promote investment and consumer spending during the economic recession. On Feb. 13, 2009, Congress passed ARRA a direct response to the economic crisis. The Recovery Act has three immediate goals:

- Create new jobs and save existing ones.
- Spur economic activity and invest in long-term growth.
- Foster unprecedented levels of accountability and transparency in government spending.

Assembly Bill 32 (AB 32), California Global Warming Solutions Act of 2006

Establishes a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases for the state of California. Makes the California Air Resources Board (CARB) responsible for monitoring and reducing statewide greenhouse gas emissions, with a target to reduce emissions to 1990 levels by 2020.

Assembly Bill 811 (AB 811)

California Assembly Bill 811 (authored by Assembly member Lloyd Levine and signed by Governor Arnold Schwarzenegger on July 21, 2008) authorizes California cities and counties to designate areas within which willing property owners could enter into contractual assessments to finance the installation of energy efficiency improvements and/or distributed renewable energy generation.

Source: California Long Term Energy Efficiency Strategic Plan

Assembly Bill 1109 (Huffman Bill)

California Assembly Bill 1109 (authored by Assembly member Jared Huffman and signed by Governor Arnold Schwarzenegger on October 12, 2007) prohibits the manufacturing for sale or the sale of certain general purpose lights that contain hazardous substances, and requires the California Energy Commission to adopt energy efficiency standards for general purpose lights.

Source: California Long Term Energy Efficiency Strategic Plan

Baseline Inventory

The base year for assessment of energy trends against which future progress can be measured for a single calendar year (2005–2008), consistent with legislative guidance and the Assembly Bill 32 Scoping Plan.

Best Practice

Coordinated technologies, systems and design approaches, which (through research and experience) demonstrate the ability to consistently achieve above standard results while avoiding negative environmental impacts. Best practices change over time as improved components, technologies, systems and design approaches become available.

Source: California Long Term Energy Efficiency Strategic Plan

Building Envelope

All components of a building that enclose conditioned space, and separate it from unconditioned space or the outdoors.

Buildout; Build-out

Development of land to its full potential or theoretical capacity as permitted under current or proposed planning or zoning designations.

Business as Usual (BAU)

A scenario that assumes that no specific actions will be taken to reduce emissions and growth coming from the expansion of activity and services within the city. All forecasts are based on this scenario.

California Air Pollution Control Officers Association (CAPCOA)

An Association of Air Pollution Control Officers representing the 35 local air quality agencies throughout California.

California Air Resources Board (CARB)

A part of the California Environmental Protection Agency that reports directly to the Governor's Office in the Executive Branch of California State Government. The CARB's mission is to promote and protect public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants while recognizing and considering the effects on the economy of the state.

Source: California Long Term Energy Efficiency Strategic Plan

California Building Code (Title 24, Part 6)

California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code (composed of 12 parts). Title 24, Part 6 sets forth California's energy efficiency standards for residential and nonresidential buildings and was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

Source: Southern California Edison

California Environmental Quality Act

A state law requiring state and local agencies to regulate activities with consideration for environmental protection. If a proposed activity has the potential for a significant adverse environmental impact, an environmental impact report (EIR) must be prepared and certified as to its adequacy before action can be taken on the proposed project. General plans require the preparation of a program EIR.

California Global Warming Solutions Act of 2006

See Assembly Bill 32.

California Green Building Code (CALGreen, Title 24, Part 11)

Refers to CALGreen component of the California Building Code. See California Building Code.

California Long Term Energy Efficiency Strategic Plan (CEESP)

A plan adopted by the California Public Utilities Commission in 2008 that presents a single roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive plan for 2009 to 2020 is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.

California Solar Initiative (CSI)

Allows the California Public Utilities Commission to provide incentives to install solar technology on existing residential, commercial, nonprofit, and governmental buildings if they are customers of the state's investor-owned utilities: Pacific Gas and Electric (PG&E), San Diego Gas & Electric (SDG&E), or Southern California Edison (SCE).

Carbon Dioxide Equivalent (CO_2e)

A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the

associated GWP. For example, the GWP for methane is 21. This means that emissions of one million metric tons of methane are equivalent to emissions of 21 million $MTCO_2e$.

City Energy Action Team (CEAT)

A team assembled to provide input on Energy Action Plan (EAP) preparation and participate in EAP implementation. The team is composed of the City's key staff and department representatives, including those necessary to implement EAP projects, such as building maintenance staff. CEAT members support data, collection, share information on existing efforts and projects, and advise the development of EAP strategies.

Clean Car Fuel Standard (AB 1493 – Pavley)

Signed into law in 2002 and commonly referred to as Pavley standards. Requires carmakers to reduce greenhouse gas emissions from new passenger cars and light trucks beginning in 2011. CARB anticipates that the Pavley standards will reduce greenhouse gas emissions from new California passenger vehicles by about 22% in 2012 and about 30% in 2016, all while improving fuel efficiency and reducing motorists' costs.

Climate Change (global climate change)

The term "climate change" is sometimes used to refer to all forms of climatic inconsistency, but because the earth's climate is never static, the term is more properly used to imply a significant change from one climatic condition to another. In some cases, climate change has been used synonymously with the term "global warming"; scientists, however, tend to use the term in the wider sense to also include natural changes in climate.

Community-wide Greenhouse Gas Inventory

Looks at greenhouse gas emissions caused by all activities within a city's geographic boundary. Typical sectors include residential, commercial, and industrial energy use, transportation, off-road equipment, waste generation, and energy associated with water delivery and treatment.

Cool California

A State-operated website that provides tools and information to residents, businesses, schools, and local governments to take action related to climate change. The website links and resources related to energy efficiency, cool roofs, grant programs, and more. The website is available online: http://www.coolcalifornia.org/.

Daylighting

Building assemblies (such as use of windows, skylights, light tubes, and reflective surfaces) designed to introduce daylight into a building for the purpose of illumination, view, and to reduce a building's reliance on electric lighting.

Source: California Energy Efficiency Strategic Plan

Demand Response

Mechanism for managing end user electricity consumption in response to energy supply conditions. A demand responsive system is one that can be controlled (either directly or remotely) to reduce electricity consumption during times of increased energy demand and/or constrained energy availability.

Source: California Long Term Energy Efficiency Strategic Plan

Direct Access Electricity

Direct access service is an optional choice that customers can select to purchase electricity and other services from an electric service provider (ESP), instead of from Southern California Edison. An ESP is an entity that contracts directly with its customers to provide electric service, and is responsible for arranging an adequate supply of

electricity. ESPs are required to meet certain requirements with the California Public Utilities Commission in addition to meeting financial and technical requirements with Southern California Edison.

Electricity Sectors

The EAP groups electricity use into four key topics, based on the type of activity that consumes electricity and causes greenhouse gas emissions. The electricity sectors consist of existing residential, existing nonresidential, new development (residential and nonresidential), and City government operations.

Emissions Forecast

Baseline emissions are forecast to future years based on projected increases in population, jobs, households, and other local trends. Forecasts will show two scenarios: (1) outcomes if no behavioral or regulatory changes are made (a business-as-usual scenario), and (2) outcomes to account for reduction efforts mandated by the state of California, such as new vehicle standards and fuel standards.

Emissions Standard

The maximum amount of pollutant legally permitted to be discharged from a single source, either mobile or stationary.

Energy Committee

An advisory committee whose members would be appointed by the City Council and composed of local residents with expertise in sustainability related fields. The committee would be responsible for providing input to the City Council regarding policies and opportunities for energy programs, in addition to helping coordinate with responsible departments and managers for action implementation. The City of West Covina does not currently have an Energy Committee. This plan recommends creation of an Energy Committee to support with ongoing energy program implementation.

Energy Conservation

Methods of reducing energy waste, such as turning off lights or heating when not needed.

Energy Efficiency

Doing the same or more work with less energy, such as replacing incandescent light bulbs with compact fluorescent light bulbs, using appliances that use less electricity to run than older models, or utilizing a vehicle that can travel farther using the same amount of gasoline.

Energy Efficiency and Conservation Block Grant

The Energy Efficiency and Conservation Block Grant program was funded through the American Recovery and Reinvestment Act and managed by the US Department of Energy to assist cities, counties, states, and territories to develop, promote, and implement energy efficiency and conservation programs and projects.

Energy Environment and Natural Resource Committee

The San Gabriel Valley Council of Government's Energy, Environment, and Natural Resources Committee coordinates environment-related efforts among the valley's many jurisdictions, pursues funding opportunities for the valley, and promotes beneficial policies to its member agencies.

Energy Leader Partnership Model

Southern California Edison (SCE) has developed the Energy Leader Partnership (ELP) Model to provide support to local governments in identifying and implementing opportunities to improve energy efficiency in municipal facilities and promoting community awareness of demand side energy management opportunities. By participating

in SCE's ELP, local governments are taking actions to support the California Long Term Energy Efficiency Strategic Plan while saving energy and fiscal resources for their communities. In the San Gabriel Valley, the San Gabriel Valley Council of Governments (SGVCOG) is leading the implementation of the ELP with SCE and 27 of the 31 member cities in the SGVCOG. The ELP comprises four focus areas: municipal retrofits, demand response, strategic plan support, and energy efficiency programs coordination. The ELP program has four incentive tiers for participating cities: (1) Valued Partner, (2) Silver, (3) Gold, and (4) Platinum. Each city begins the program as a valued partner and to advance to the next incentive tier, each participating city must achieve the pre-determined energy savings and requirements community-wide and for city facilities.

Energy Star

A joint program of the US Environmental Protection Agency and the US Department of Energy to provide consumers with information and incentives to purchase the most energy-efficient products available.

Energy Upgrade California

Energy Upgrade California is a new statewide program that offers incentives to homeowners who complete select energy-saving home improvements on a single-family residence. These incentive packages encourage customers to take a "whole house" approach by combining several related improvements at once to increase a home's overall energy efficiency and achieve greater savings. By working with participating contractors, homeowners can choose from two incentive options, the Basic Upgrade Package or the Advanced Upgrade Package, based on their improvement needs and budget.

Source: Pacific Gas and Electric Company

Enterprise Energy Management Information Systems

The San Gabriel Valley Council of Governments (SGVCOG) has funded and created a program to set up a "utility manager" computer program to track municipal usage and identify need for sub-metering to plan, budget, and manage bills for each city facility. The SGVCOG is collaborating with the County of Los Angeles to implement the County's Enterprise Energy Management Information System (EEMIS) utility manager to track municipal energy usage, enabling participating San Gabriel Valley municipalities to access facility energy consumption, archive billing data, and report and analyze energy consumption data via the Internet. The County's EEMIS project was developed in 2000 and has been adapted to assist cities in the SGVCOG with monitoring, forecasting, and budgeting for energy use at city facilities.

First Cost

Immediate purchase and installation cost. First costs do not include lifecycle or long-term operating costs, which may result in long-term cost savings from increased efficiency, reduced maintenance, and other factors.

Source: California Long Term Energy Efficiency Strategic Plan

Goal

The desired end state or expected outcome related to electricity reduction targets in the Energy Action Plan (EAP). Each goal corresponds to one of the EAP's seven topic areas: existing residential buildings, existing nonresidential buildings, new development, planning framework, urban cooling, water and electricity efficiency, and municipal operations.

Gray water (also recycled water, reclaimed water)

Treated or recycled wastewater of a quality suitable for non-potable uses such as landscape irrigation; not intended for human consumption.

Green Building

Sustainable or "green" building is a holistic approach to design, construction, and demolition that minimizes the building's impact on the environment, the occupants, and the community.

Greenhouse Gases (GHG)

Gases which cause heat to be trapped in the atmosphere, warming the earth. Greenhouse gases are necessary to keep the earth warm, but increasing concentrations of these gases are implicated in global climate change. The majority of greenhouse gases come from natural sources, although human activity is also a major contributor. The principal greenhouse gases that enter the atmosphere because of human activities are:

- Carbon Dioxide (CO_2): Carbon dioxide is a colorless, odorless gas that occurs naturally in the Earth's atmosphere. Carbon dioxide also enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products, and as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O): Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as high global warming potential gases ("high GWP gases").

Greenhouse Gas Inventory

A greenhouse gas inventory provides estimates of the amount of greenhouse gases emitted to and removed from the atmosphere by human activities. A city or county that conducts an inventory looks at both community emissions sources as well as emissions from government operations. A base year is chosen and used to gather all data from that year. Inventories include data collection from such things as vehicle miles traveled (VMT), energy usage from electricity and gas, and waste. Inventories include estimates for carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydroflourocarbons (HFCs), and perflourocarbons (PFCs), which are referred to as the six Kyoto gases.

Green Teams

A formal or informal group of people in a company who are passionate about environmental issues. The groups brainstorm solutions and promote ways in which their company's practices can become more environmentally sustainable, often creating sustainability plans and approaching management for funding to meet plans.

Source: California Long Term Energy Efficiency Strategic Plan

Green Waste

Refers to lawn, garden, or park plant trimmings and materials and can be used in home composts or picked up curbside by municipal waste haulers.

Heating, Ventilation, and Air Conditioning (HVAC)

Systems that help maintain good indoor air quality through adequate ventilation with filtration and provide thermal comfort.

Implementation Action

An action, procedure, program, or strategy to achieve the electricity reductions of a policy. Action items may provide interim steps or supporting strategies. Actions may also indicate the range of opportunities to increase the electricity reduction potential of a policy.

Integrated Systems

Lighting systems that include components, assemblies, and controls designed to work together effectively.

Kilowatt-hour (kWh)

A unit of energy equivalent to one kilowatt (kW) of energy used for an hour. For example, if an appliance requires a kW of energy to function, leaving the appliance on for one hour would consume one kWh of energy.

Source: California Long Term Energy Efficiency Strategic Plan

Leadership in Energy and Environmental Design

A green building standard and set of rating systems established by the US Green Building Council.

Lifecycle Cost

Cost of a component, technology, or system over its entire lifespan, including not just first costs but also operating, maintenance, and disposal costs.

Methodology

A consistent body of methods or procedures to approach a given task; in terms of a greenhouse gas emissions inventory and forecast, refers to an internally consistent approach to quantify greenhouse gas emissions that supports the principles of inventories identified in the Local Government Operations Protocol: relevance, completeness, consistency, transparency, and accuracy.

Mixed Use

Properties on which various uses such as office, commercial, institutional, and residential are combined in a single building or on a single site in an integrated development project with significant functional interrelationships and a coherent physical design. A "single site" may include contiguous properties.

Municipal Operations Greenhouse Gas Inventory

Looks at greenhouse gas emissions caused by City operations. Typical sectors include energy associated with City facilities, vehicle fleets, equipment, waste generation, employee commutes, and more.

Participating Municipality

Those jurisdictions or member cities that: (i) are located in Southern California Edison's (SCE) service territory; and (ii) have been selected by SCE and the SGVCOG Implementer to participate in the program as set forth in the Statement of Work. Includes 27 participating cities (Alhambra, Arcadia, Baldwin Park, Bradbury, Claremont, Covina, Diamond Bar, Duarte, El Monte, Glendora, Irwindale, La Cañada-Flintridge, La Puente, La Verne, Monrovia, Montebello, Monterey Park, Pomona, Rosemead, San Dimas, San Gabriel, San Marino, Sierra Madre, South El Monte, South Pasadena, Temple City, and West Covina).

Source: Southern California Edison

Performance Indicators

Specific, measureable, actionable, realistic, and time-specific requirements that will directly and measurably contribute to the City's Energy Action Plan goals.

Source: Southern California Edison

Personal Energy Action Survey

As part of the regional partnership with the SGVCOG, the City distributed the personal energy action survey on energy efficiency at public events and through the City website. A blank version of the survey is provided in Appendix A. Participation in the survey was voluntary. Survey results help to provide a useful snapshot of energy-related opinion and behavior; however, the results should not be interpreted as statistically valid.

Policy

A statement that guides decision-making and indicates a commitment to achieve the specified outcomes of the goal. Policies provide the foundation for quantification of electricity reduction potentials in the Energy Action Plan.

Project Steering Committee

Along with other San Gabriel Valley cities taking part in the regional Energy Action Plan (EAP) project, the City participated in a Project Steering Committee (PSC) throughout EAP development. The purpose of the PSC is to confirm a regional approach to EAP development, guide the project, and share best practices among jurisdictions. Starting in July 2011, the PSC convened approximately once a month. During PSC meetings, representatives from San Gabriel Valley Council of Governments staff and technical consultant project team facilitated discussions and presentations to review options to achieve electricity efficiency.

Property Assessed Clean Energy (PACE)

A form of financing that creates municipal finance districts to provide loans to homeowners and businesses for energy-efficient retrofits and renewable energy system installations. Loans are repaid through an annual surcharge on property tax assessments. Governor Schwarzenegger signed the nation's first law allowing PACE financing in 2008.

Source: California Long Term Energy Efficiency Strategic Plan

Public Goods Charge

The funds which make up the Implementer Budget and which are collected from electric utility ratepayers pursuant to Section 381 of the California Public Utilities Code for public purposes programs, including energy efficiency programs approved by the California Public Utilities Commission.

Source: Southern California Edison

Reach Codes

Codes that direct contractors to construct buildings significantly more energy efficient than required by conventional building codes.

Source: California Long Term Energy Efficiency Strategic Plan

Rebate

Offered by the state, utility, or local government to promote the installation of renewables and energy efficiency projects.

Renewable Energy

Energy from sources that regenerate and are less damaging to the environment, such as solar, wind, biomass, and small-scale hydroelectric power.

Renewables Portfolio Standard

Requires utility providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and to 33% by 2020. Due to potential implementation issues, the adjusted business-as-usual forecast assumes that energy providers will achieve a minimum 28% renewable portfolio by 2020.

San Gabriel Valley Council of Governments (SGVCOG)

A Joint Powers Authority representing 31 incorporated cities and unincorporated areas in the San Gabriel Valley. The SGVCOG works with member agencies to collectively address transportation, housing, economic growth, and environment issues that are most effectively addressed at a regional scale.

San Gabriel Valley Energy Wise Partnership

An alliance between the San Gabriel Valley Council of Governments and Southern California Edison to bring energy savings to the San Gabriel Valley through innovative public education and energy efficiency projects. The program seeks to reduce energy usage in the region by approximately 5 million kilowatt-hours by 2012.

Savings by Design (SBD)

California's nonresidential new construction energy efficiency program, administered statewide and funded by energy utility customers through the Public Purpose Programs surcharge applied to gas and electric services. Projects participating in SBD receive services including design assistance, owners incentives, design team incentives, and energy design resources. Services begin in the project design phase and continue through construction completion.

Source: Southern California Edison

Senate Bill 375

Requires the California Air Resources Board to develop regional greenhouse gas emissions reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. The regional targets adopted by the Southern California Association of Governments (SCAG) are an 8% reduction in per capita transportation emissions by 2020 and a conditional 13% reduction by 2035, which will be achieved through the development of a Sustainable Communities Strategy as part of the 2012 Regional Transportation Plan update.

Sectors

Emissions are grouped by the type of activity that generated the emissions, such as transportation, residential energy use, or commercial energy use.

Simple Payback Period

Amount of time required to recover an initial investment.

Source: California Long Term Energy Efficiency Strategic Plan

Smart Lighting

Lighting that is dynamically responsive to end-user needs based on daylighting, occupancy, scheduling, and demand response requirements.

Source: California Long Term Energy Efficiency Strategic Plan

South Coast Air Quality Management District (SCAQMD)

The air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties, the smoggiest region of the U.S. SCAQMD's goal is to protect the health of residents, while remaining sensitive to businesses.

Southern California Edison (SCE)

An investor-owned utility that is the primary electricity provider to Southern California and the San Gabriel Valley.

Southern California Edison (SCE) Energy Leader Partnership

A program run by SCE that provides support to local governments and institutions to assist them in achieving a joint vision of sustainability. SCE works closely with partners to address key issues that are barriers to achieving this vision and develop a long term energy efficiency strategy. For local governments, SCE provides support to identify and address energy efficiency opportunities in municipal facilities, take actions supporting the California Long Term Energy Efficiency Strategic Plan, and increase community awareness and participation in demand side management opportunities. A key goal in SCE's local government partnerships is helping cities and counties lead by example in addressing energy efficiency first in their own municipal facilities.

Southern California Edison Incentive (financial incentive)

Provisions issued by Southern California Edison in order to promote the installation of energy efficiency and renewable projects in the utility territory. There are a variety of types of incentives, including rebates, loans, and alternative rates. The incentives are paid through the statewide Public Good Charge.

Southern California Regional Energy Consortium

Los Angeles County program that will bundle like projects for economies of scale after city energy efficiency projects have been identified.

Standard Practice

As opposed to best practices, standard practices include techniques, policies, methodologies, procedures, technologies and systems that are typically employed by practitioners and generally do not achieve optimal results (in terms of energy efficiency, demand-responsiveness, high quality, environmental sustainability, smart-grid connectedness, and integration with renewable energy generation sources).

Source: California Long Term Energy Efficiency Strategic Plan

Sustainability

Community use of natural resources in a way that does not jeopardize the ability of future generations to live and prosper.

Sustainable Development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Source: Report of the World Commission on Environment and Development: Our Common Future, also known as the Brundtland Commission or Brundtland Report

Tariff

Electricity rates set by the utility and approved by the California Public Utilities Commission to recover costs. Customers may be placed in different rate classes based on a combination of parameters such as level of demand, end-use applications, or economic situation.

Title 24

See California Building Code.

Vehicle Miles Traveled (VMT)

A key measure of overall street and highway use. Reducing VMT is often a major objective in efforts to reduce vehicular congestion and achieve regional air quality goals.

Water Conservation

Reducing water use, such as turning off taps, shortening shower times, and cutting back on outdoor irrigation.

Water Efficiency

Replacing older technologies and practices in order to accomplish the same results with less water; for example, by replacing toilets with new low-water-using models and by installing “smart controllers” in irrigated areas.

Zero Net Energy

For buildings, use of no more energy over the course of a year than can be generated onsite through renewable resources such as solar, wind, or geothermal power.

Source: California Long Term Energy Efficiency Strategic Plan

APPENDIX A

PERSONAL ENERGY ACTION SURVEY

As part of the stakeholder outreach process, an online survey was created to solicit resident and business input on energy efficiency actions that they have already taken in their home or business and actions that they may be willing to take within the next five years. This appendix includes a blank version of the survey, while the results are summarized in **Chapter 1** of this document.

APPENDIX A

APPENDIX A

PERSONAL ENERGY ACTION SURVEY: SGVCOG ENERGY ACTION PLAN

Your City is initiating an Energy Efficiency Plan to achieve determine the City's existing and future energy use and to meet the City's energy reduction goals.

This survey is an important way to assist City staff and provide input into the project planning process. It should take about 10 minutes to fill out.

This project has been funded by Southern California Edison (SCE) as part of the California Long-Term Energy Efficiency Strategic Plan to develop a Regional Framework and individual energy efficiency chapters of climate action plans (EECAP) for cities in the San Gabriel Valley Council of Governments (SGVCOG). If you would like more information regarding the project, please contact Marisa Creter, at mcreter@sgvcog.org or (626) 457-1800.

1) What City do you live and/or work in the most?

- Alhambra
- Arcadia
- Baldwin Park
- Bradbury
- Claremont
- Covina
- Diamond Bar
- Duarte
- El Monte
- Glendora
- Irwindale
- La Cañada Flintridge
- La Puente
- La Verne
- Monrovia
- Montebello
- Monterey Park
- Pomona
- Rosemead
- San Dimas
- San Gabriel
- San Marino
- Sierra Madre
- South El Monte
- South Pasadena
- Temple City
- Walnut
- West Covina

2) What do you identify with most when thinking of the City chosen above?

- Resident
- Business Owner
- Work
- Other

3) Which of the following ranges includes your age?

- 24 or under
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 and above

4) If you do not reside in the City you chose above, in what city do you reside?

- Please choose a city from the list or enter a city below.
- Other (please specify)

5) Do you rent or own your home?
   - Rent house
   - Rent apartment
   - Own

6) How many people live in your household (including yourself)?
   - 1
   - 2
   - 3
   - 4 or more

7) What have you already done in your home or business to reduce energy use? (Select all that apply)
   - Replaced older light bulbs with more energy efficient bulbs
   - Replaced appliances with more energy efficient models
   - Replaced or upgraded heating and cooling system
   - Upgraded insulation
   - Upgraded to more energy efficient windows
   - Installed a solar hot water heater
   - Installed solar or wind systems on my roof or property
   - I have not done anything to my home or business to reduce energy use
   - Other

8) Which of the following would you be ready to do in the next year to reduce energy use in your home or business? (Select all that apply)
   - Replace older light bulbs with more energy efficient bulbs
   - Replace appliances with more energy efficient models
   - Replace or upgrade heating and cooling system
   - Upgrade insulation
   - Upgrade to more energy efficient windows
   - Install a solar hot water heater
   - Install solar or wind systems on my roof or property
   - Nothing
   - Other

9) Which of the following would you be ready to do in the next five (5) years to reduce energy use in your home or business? (Select all that apply)
   - Replace older light bulbs with more energy efficient bulbs
   - Replace appliances with more energy efficient models
   - Upgrade insulation
   - Install a solar hot water heater
   - Install Photovoltaic Solar Panels on roof
   - Nothing
   - Other

10) What would encourage you to install any of the technologies mentioned in the previous questions? (Select all that apply)

- More information on the energy / financial savings
- Grants or incentive programs to offset costs
- Low-interest loans
- List of reliable contractors or installers
- Lower utility bills
- None of the above
- Other

11) In general, which of the following strategies do you support to achieve energy efficiency? (Select all that apply)

- Voluntary, incentive-based measures for individuals, businesses, and the City to achieve energy efficiency.
- Mandatory requirements for individuals, businesses, and the City to achieve energy efficiency.

APPENDIX B

GREENHOUSE GAS EMISSIONS INVENTORY REPORT

This greenhouse gas (GHG) emissions inventory and forecast (Inventory) acts as a foundation for the City of San Dimas's Electricity Energy Action Plan (EEAP) by informing the City and the community of the largest sources of GHG emissions, and thus the largest opportunities for reduction. The Inventory identifies the major and minor sources of GHG emissions to aid the process of creating reduction strategies in the EEAP in response to local emissions characteristics. Specifically, the Inventory does the following:

- Presents GHGs from community-wide and municipal activities in calendar year 2006.
- Forecasts how community-wide emissions will increase by 2020 and 2035 if no behavioral or regulatory changes are made (known as a business-as-usual scenario).
- Adjusts the GHG forecasts to account for reduction efforts mandated by the State of California, such as new energy efficiency and vehicle standards.
- Provides City staff, decision-makers, and stakeholders with adequate information to direct development of an EEAP and to establish GHG emissions reduction and energy efficiency targets, if desired.

APPENDIX B

Inventory and Forecast Purpose

This greenhouse gas (GHG) emissions inventory and forecast (Inventory) will act as a foundation for the City of San Dimas's Electricity Energy Action Plan (EEAP) by informing the City and the community of the largest sources of GHG emissions, and thus the largest opportunities for reduction. The Inventory identifies the major and minor sources of GHG emissions to help in the process of creating reduction strategies in the EEAP in response to local emissions characteristics. Specifically, the Inventory does the following:

- Presents GHGs from community-wide and municipal activities in calendar year 2006.
- Forecasts how community-wide emissions will increase by 2020 and 2035 if no behavioral or regulatory changes are made (known as a business-as-usual scenario).
- Adjusts the GHG forecasts to account for reduction efforts mandated by the State of California, such as new energy efficiency and vehicle standards.
- Provides City staff, decision-makers, and stakeholders with adequate information to direct development of an EEAP and to establish GHG emissions reduction and energy efficiency targets, if desired.

Relevant Emissions

The Inventory includes the major sources of GHGs caused by activities in the City of San Dimas per best practice and consistent with the methodologies outlined in the Best Practices Memo and in the Regional Framework and those recommended by the California Air Resources Board (CARB). The Inventory analyzes the following community and municipal emissions sources:

Community

Energy – Electricity and natural gas consumed by residents and businesses in the city.

Direct Access Electricity – Electricity purchased by commercial customers from utilities other than Southern California Edison.

Street and Traffic Lighting – Electricity used by street and traffic lights within the city but not owned by the City.

On-Road Transportation – Vehicle miles traveled (VMT) in, to, and from the city.

Waste – Methane emissions from waste (municipal solid waste), and green waste (alternative daily cover) sent to landfills and regional incinerators (also known as transformation facilities) from the city.

Water and Wastewater – Energy required to extract, filter, deliver, and treat the water used and wastewater disposed by the community.

Off-Road Equipment – Emissions from construction and lawn & garden equipment operated within the city.

Municipal

Buildings – Electricity and natural gas consumed by City buildings and facilities.

Off-Road Equipment – Fuel used for construction projects, landscaping, or other off-road purposes.

Fleet – Gasoline, diesel, and compressed natural gas (CNG) used by all City-owned vehicles.

Lighting – Electricity, paid for by the City, used by street and traffic lighting and outdoor lighting at parks and other facilities within city limits.

Employee Commute – Emissions from the vehicles City employees use to get to and from work.

Government-Generated Waste – Indirect emissions from the waste disposed by employees and operations of the City.

KEY CONCEPTS

The following terms are used throughout the Inventory and are fundamental to understanding the contents of the greenhouse gas inventory and forecast:

- **Baseline year** – Emissions are quantified for the baseline year of 2006, a year consistent with the baseline year definition of Assembly Bill (AB) 32, the California Global Warming Solutions Act. This baseline year allows the City to track and observe the impact of its actions taken to date and better inform future GHG reduction strategies.

- **Business-as-usual (BAU)** – The scenario on which all forecasts are based. Assumes no specific actions are taken to reduce emissions and growth comes from the expansion of activity and services within the city.

- **Carbon dioxide equivalent (CO_2e)** – Represents the three main GHGs—carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)—in comparable terms, since all three gases trap heat in the atmosphere differently. Greenhouse gases are reported in metric tons of CO_2e ($MTCO_2e$).

- **Sectors** – Emissions are grouped by the type of activity that generated the emissions, such as transportation, residential energy use, or commercial energy use.

COMMUNITY-WIDE INVENTORY

COMMUNITY SUMMARY

The City of San Dimas emitted approximately 307,310 $MTCO_2e$ in the baseline year 2006. As illustrated in **Figure B-I** and **Table B-1**, the transportation sector was responsible a majority (51%) of San Dimas's greenhouse gas emissions, about 156,650 $MTCO_2e$ in total. Commercial and industrial energy use was the next largest contributor (22%, or about 68,850 $MTCO_2e$), following by residential energy use at 19% (about 57,510 $MTCO_2e$). The remaining 8% of emissions (about 24,300 $MTCO_2e$) came from a number of other sources, including street and traffic lighting, construction equipment, and solid waste.

Figure B-1: Community-Wide GHG Emissions by Sector

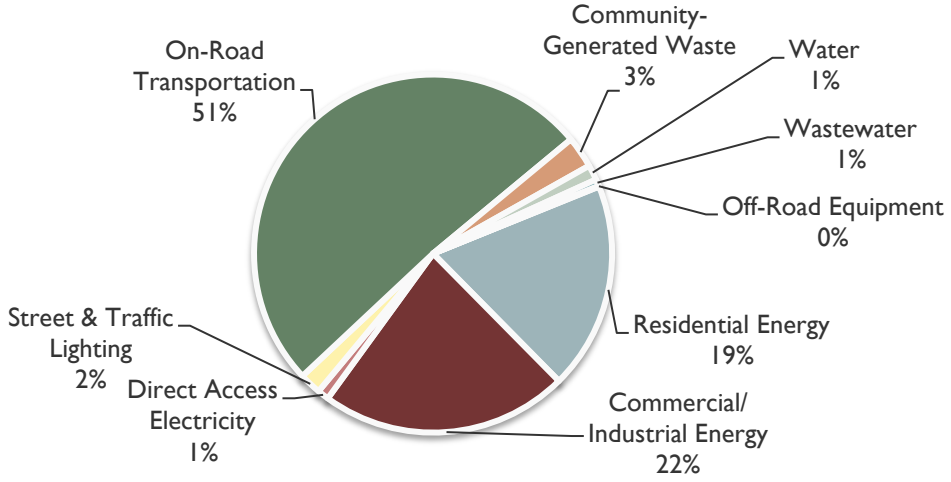


Table B-1: Community-Wide GHG Emissions by Sector

Sector	$MTCO_2e$	Percentage of Total
Residential Energy	57,510	19%
Commercial/Industrial Energy	68,850	22%
Direct Access Electricity	3,190	1%
Street & Traffic Lighting	6,050	2%
On-Road Transportation	156,650	51%
Solid Waste	8,780	3%
Water	4,200	1%
Wastewater	1,910	1%
Off-Road Equipment	170	<1%
Total	**307,310**	**100%**

** Due to rounding, the total may not equal the sum of component parts.*

DETAILED ANALYSIS BY SECTOR

There are multiple subsectors within each sector of the community inventory that contribute to the total emissions. **Table B-2** divides each sector into its individual subsectors and displays the emissions for each subsector. For example, the residential energy sector in **Table B-1** is broken into the residential electricity and residential natural gas subsectors in **Table B-2.**

Table B-2: Detailed Activity Data and GHG Emissions, 2006

Sector	Activity Data		$MTCO_2e$
Residential Electricity	99,697,600	kWh	29,160
Residential Natural Gas	5,328,420	Therms	28,350
Commercial/Industrial Electricity	134,406,460	kWh	54,450
Commercial/Industrial Natural Gas	2,706,420	Therms	14,400
Direct Access Electricity	10,897,820	kWh	3,190
Street & Traffic Lighting	20,684,810	kWh	6,050
On-Road Transportation	294,391,880	VMT	156,650
Waste – Municipal Solid Waste	42,710	Tons of Waste	7,880
Waste – Alternative Daily Cover	5,690	Tons of ADC	880
Waste – Transformed	70	Tons Transformed	20
Off-Road – Lawn & Garden	6,790	Households	10
Off Road – Construction	10	Permits Issued	160
Water	29,681,520	kWh	4,200
Wastewater – Indirect	6,538,010	kWh	1,910
Total			**307,310**

** Due to rounding, the total may not equal the sum of component parts.*

MUNICIPAL INVENTORY

MUNICIPAL SUMMARY

The municipal operations of the City of San Dimas in 2006 resulted in about 1,750 $MTCO_2e$ of emissions. The contributions of each sector to this total are highlighted in **Figure B-2** and **Table B-3.** The Buildings sector is the single greatest emitter, responsible for about 44% of the total emissions from City operations. Lighting had the second-largest emissions (31%), with the City fleet, commute from City employees, and government-generated waste being responsible for remaining emissions.

Figure B-2: Municipal GHG Emissions by Sector

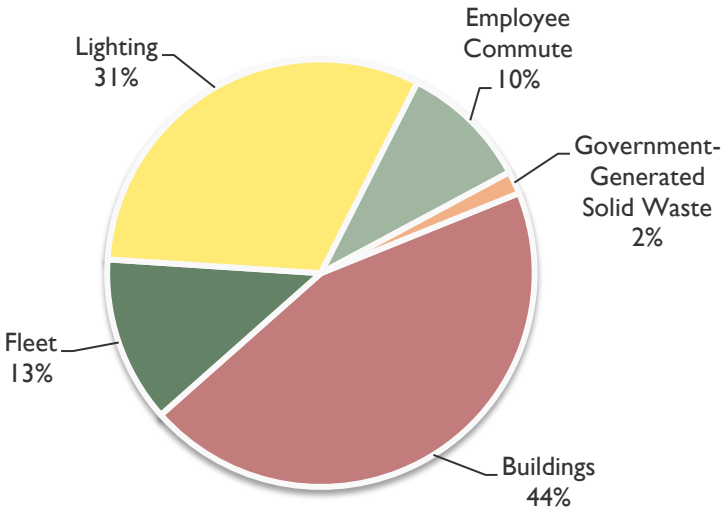


Table B-3: Municipal GHG Emissions by Sector

Sector	MTCO2e	Percentage
Buildings	780	44%
Fleet	220	13%
Lighting	550	31%
Employee Commute	170	10%
Government-Generated Solid Waste	30	2%
Total	**1,750**	**100%**

** Due to rounding, the total may not equal the sum of component parts.*

DETAILED ANALYSIS BY SECTOR

As with the community inventory, each sector in the municipal inventory is made up of various subsectors. These subsectors and their individual contributions to total municipal emissions can be seen in **Table B-4**.

Table B-4: Detailed Municipal Activity Data and GHG Emissions

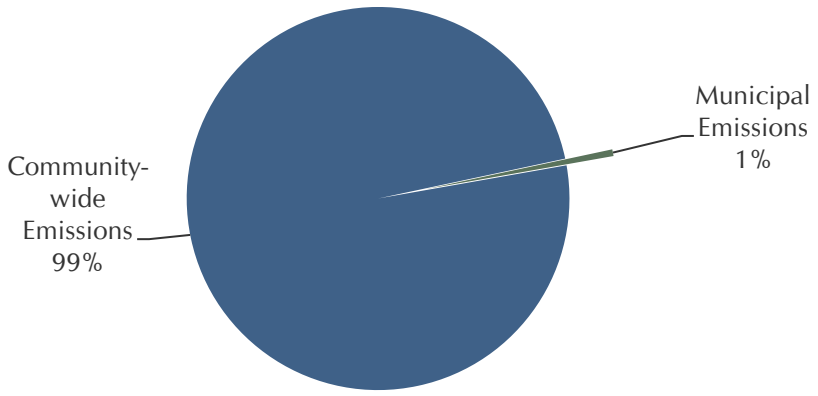
Sector	Subsector	Activity Data	Unit	$MTCO_2e$
Buildings	Electricity	1,952,550	kWh	570
	Natural Gas	39,450	Therms	210
Fleet	Gasoline	14,519	Gallons	130
	Diesel	8,987	Gallons	90
	Electric	2,820	kWh	<10
Lighting	City-Owned Streetlights	227,420	kWh	70
	Traffic Lights	194,440	kWh	60
	SCE-Owned Streetlights	1,453,310	kWh	420
Employee Commute		444,640	VMT	170
Government-Generated Solid Waste	Tons Disposed	45	Tons	30
Total				1,750

** Due to rounding, the total may not equal the sum of component parts.*

RELATION TO COMMUNITY-WIDE INVENTORY

Municipal emissions account for about 1% of San Dimas's total community-wide emissions, as illustrated in **Figure B-3.** Municipal emissions qualify as a subset of community emissions, since most of the City's operations take place within the boundaries of San Dimas. As a result, all of the City's operations are reflected in different sectors of the community inventory. For example, the emissions from City employees' commute is included as part of the community-wide transportation emissions. Even though the City's emissions are included in the community inventory, the municipal inventory provides a more detailed description of emissions from San Dimas's operations, so that the City may revise its internal policies and practices.

Figure B-3: Municipal and Community-Wide GHG Emissions



2010 EMISSIONS ASSESSMENT

Activity data for 2010 was available for all subsectors of the community inventory and has been converted into GHG emissions for San Dimas and all other participating communities. This 2010 interim inventory serves as a common point of comparison for all participating communities in the San Gabriel Valley, as well as allowing cities to track any changes to their activities and greenhouse gas emissions since the baseline year. A comparison of 2010 activity and emissions data to 2006 emissions is displayed in **Table B-5.**

In 2010, emissions reductions were seen in all community subsectors except direct access electricity, alternative daily cover, and off-road lawn and garden equipment. Off-road construction emissions increased 131% while there was no change in the number of construction permits issued in the same period. This divergence comes from the shortfalls of the model used to estimate off-road emissions, OFFROAD2007, and the methods used to relate countywide emissions to San Dimas. OFFROAD2007 outputs construction emissions for all of Los Angeles County, and those emissions are assigned to San Dimas using the city's proportion of countywide construction permits issued. In the housing construction decline between 2006 and 2010, fewer permits were issued throughout the county; however, OFFROAD2007 did not show the associated decrease in construction equipment emissions. The large declines in commercial/industrial electricity, natural gas, and residential energy have no direct explanation, but are likely due to the economic downturn in recent years. All subsectors of waste also saw drastic changes from 2006 to 2010. During background research aimed at explaining these changes, the project team noticed the same instability throughout Los Angeles County. Most of the county saw large changes in solid waste disposal from 2006 to 2010

Table B-5: 2010 Community Activity and Emissions Data

Sector	2006 Activity	2010 Activity	% Change (2006-2010)	Units	2006 $MTCO_2e$	2010 $MTCO_2e$	% Change (2006-2010)
Residential Electricity	99,697,600	90,011,660	-10%	kWh	29,160	25,910	-11%
Residential Natural Gas	5,328,420	5,071,330	-5%	Therms	28,350	26,980	-5%
Commercial/Industrial Electricity	134,406,460	122,694,600	-9%	kWh	54,450	35,320	-35%
Commercial/Industrial Natural Gas	2,706,420	2,008,050	-26%	Therms	14,400	10,680	-26%
Direct Access Electricity	10,897,820	16,752,050	54%	kWh	3,190	7,020	120%
Street &Traffic Lighting	20,684,810	20,572,290	-1%	kWh	6,050	5,920	-2%
Transportation	294,391,880	297,023,350	1%	VMT	156,650	153,750	-2%
Waste	42,710	30,610	-28%	Tons	7,880	5,710	-28%
Waste - ADC	5,690	6,090	7%	Tons of ADC	880	940	7%
Waste - Transformed	70	10	-86%	Tons	20	-	-100%
Off-Road - Lawn Garden	6,790	12,270	81%	Households	10	10	0%
Off-Road - Construction	10	10	0%	Permits	160	370	131%
Water	29,653,250	27,701,360	-7%	kWh	4,200	3,920	-7%
Wastewater - Indirect	6,539,400	6,108,950	-7%	kWh	1,910	1,780	-7%
Wastewater - Direct	-		-	MTCO2e	-		
				Total*	307,310	278,310	-9%

** Due to rounding, the total may not equal the sum of component parts.*

As with community emissions, an interim inventory for 2010 has been prepared for municipal operations with much the same intent. This inventory, detailed in **Table B-6**, reflects some of the energy efficiency programs that San Dimas has undertaken since 2006. Emissions from City operations in 2010 were estimated at 1,710 $MTCO_2e$, a 2% decrease from baseline. Since City Hall was not occupied fully during the calendar year of 2010, a fiscal year 2011-12 proxy was used to estimate electricity usage. This information was provided by SCE in the form of an account summary for the City Hall electricity account.

Table B-6: 2010 Municipal Activity Data and Emissions

Sector	Sub-Sector	2006 Activity	2010 Activity	% Change		2006 $MTCO_2e$	2010 $MTCO_2e$	% Change
Buildings	Electricity	1,952,550	1,796,420	-8%	kWh	570	520	-9%
	Natural Gas	39,450	39,450	0%	Therms	210	210	0%
Fleet	Gasoline	14,520	14,520	0%	Gallons	130	130	0%
	Diesel	8,990	8,990	0%	Gallons	90	90	0%
	Electricity	2,820	2,820	0%	kWh	<10	<10	0%
Lighting	Streetlights	227,420	239,540	5%	kWh	70	70	0%
	Traffic Lights	194,440	178,280	-8%	kWh	60	50	-17%
	SCE-Owned Streetlights	1,453,310	1,450,510	0%	kWh	420	420	0%
Employee Commute		444,640	478,840	8%	VMT	170	190	12%
Government-Generated Solid Waste	Tons Disposed	50	50	0%	Tons	30	30	0%
				Total*		1,750	1,710	-2%

* Due to rounding, the total may not equal the sum of component parts.

Business-as-Usual Forecast

The business-as-usual (BAU) forecast is an estimate of how GHG emissions will change over time without influence from federal, state, regional, and local reduction efforts. The BAU forecast in this inventory assumes 2006 energy use, waste disposal, and energy efficiency rates. It focuses on two target years: 2020 (for consistency with AB 32 targets) and 2035 (for consistency with SB 375 horizons).

COMMUNITY BAU INDICATORS

A number of growth indicators and sources are used to forecast San Dimas's community-wide emissions, as illustrated in **Table B-7**. All indicators for 2020 and 2035, except those used for transportation, are from the Southern California Association of Government (SCAG) Proposed Final 2012 Regional Transportation Plan (RTP). Residential energy use is tied to the number of households within city limits for the target years. Similarly, commercial and industrial energy use emissions are assumed to grow with the number of jobs. Growth in waste emissions is based on the total service population of San Dimas, as this includes projected residential, commercial, and industrial growth. Fehr & Peers Transportation Consultants used SCAG's 2003 RTP travel model to forecast the growth in transportation activity (VMT). Fehr & Peers compared population, household, and jobs forecasts from the

2003 RTP model with comparable data sources to confirm the accuracy of the VMT forecasts. Since the 2003 RTP travel model forecasts were less than Fehr & Peers' 5% adjustment margin of error, Fehr & Peers did not modify the City's VMT forecasts based on the US Census and the 2008 SCAG RTP model.

Table B-7: Community BAU Growth Projections

Growth Indicator	Emissions Sector	2006	2010	2020	2035	% Change 2006–2035	Sources
Jobs	Commercial and Industrial Energy	13,100	13,200	13,600	14,100	8%	2010 Census, SCAG 2012 RTP, SCAG 2003 RTP
Service Population (Residents + Jobs)	Solid Waste, Water, Wastewater	49,800	46,600	48,600	49,700	–	2010 Census, SCAG 2012 RTP, CA DOF
Households	Residential Energy, Off-Road	12,300	12,000	12,600	12,900	5%	2010 Census, SCAG 2012 RTP, CA DOF
Annual VMT	Transportation	294,391,900	297,023,400	303,719,900	314,090,900	7%	Fehr & Peers Transportation, 2003 RTP

Community BAU Forecast

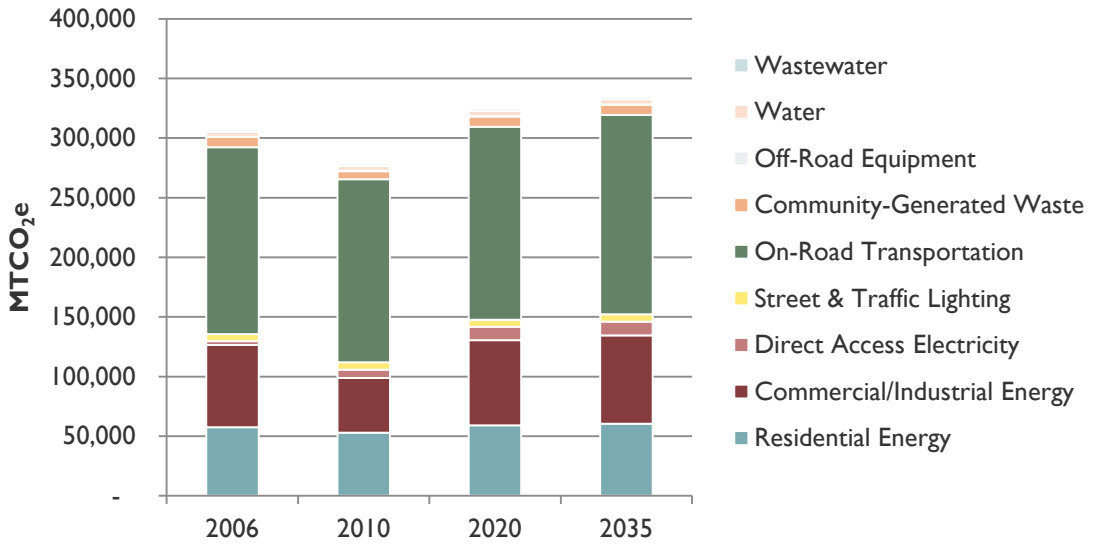
Without any actions or policies in place to reduce GHG emissions, the BAU scenario forecasts that San Dimas's community-wide emissions will grow by 6% (17,340 $MTCO_2e$) by 2020 and 9% (27,160 $MTCO_2e$) by 2035. This projected growth in emissions is show in **Table B-8** and **Figure B-4**.

Table B-8: Community BAU Emissions by Sector

Sector	2006	2010	2020	2035
Residential Energy	57,510	52,890	59,090	60,510
Commercial/Industrial Energy	68,850	46,000	71,480	74,110
Direct Access Electricity	3,190	7,020	11,130	11,540
Street and Traffic Lighting	6,050	5,920	6,050	6,050
Transportation	156,650	153,750	161,610	167,130
Solid Waste	8,780	6,650	8,570	8,760
Off-Road Equipment	170	380	760	270
Water	4,200	3,920	4,100	4,190
Wastewater	1,910	1,780	1,860	1,910
Total	**307,310**	**278,310**	**324,650**	**334,470**
Percentage Growth	**0**	**-9%**	**6%**	**9%**

** Due to rounding, the total may not equal the sum of component parts.*

Figure B-4: Community BAU Emissions by Sector



MUNICIPAL BAU FORECAST

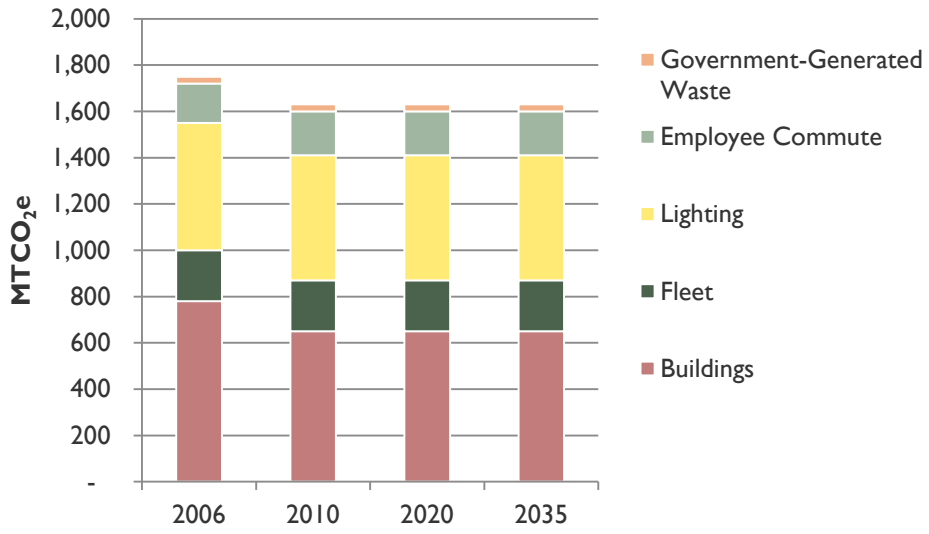
San Dimas's municipal BAU forecast assumes a no-growth scenario for the City's operations, based on correspondence and feedback with City staff. As a result, this forecast does not predict any significant changes to the interim 2010 inventory.

Table B-9: Municipal BAU Emissions by Sector ($MTCO_2e$)

Sector	2006	2010	2020	2035
Buildings	780	730	730	730
Fleet	220	220	220	220
Lighting	550	540	540	540
Employee Commute & Travel	170	190	190	190
Government-Generated Solid Waste	30	30	30	30
Total	1,750	1,710	1,710	1,710

** Due to rounding, the total may not equal the sum of component parts.*

Figure B-5: Municipal BAU Emissions by Sector



STATE ADJUSTED FORECAST

State Reduction Programs

The State has been a proactive force in reducing GHG emissions. Regulations affecting vehicle standards, building standards, and the renewable energy content of electricity will reduce GHG levels in the city. The state actions summarized below are incorporated into the BAU forecast to create a more realistic estimate of the city's future emissions.

Assembly Bill 1493 (Pavley). Signed into law in 2002, AB 1493 requires carmakers to reduce GHG emissions from new passenger cars and light trucks beginning in 2011. Regulations were adopted by CARB in 2004 and took effect in 2009 with the release of a waiver from the US Environmental Protection Agency granting California the right to implement the bill. CARB anticipates that the Pavley standards will reduce GHG emissions from California passenger vehicles by about 22% in 2012 and by about 30% in 2016, all while improving fuel efficiency and reducing motorists' costs.[2] The car industry is well on its way to meeting these efficiency targets.

Renewables Portfolio Standard. Established in 2002 in Senate Bill 1078, the Renewables Portfolio Standard (RPS) targets utility providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and to 33% by 2020. A June 2009 report from the California Public Utilities Commission indicated it is unlikely that the State and its investor-owned utilities will be able to reach the RPS goal of 33% by 2020; according to state assessments, the forecast assumes that energy providers will achieve a 28% renewable portfolio by 2020.[3]

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[2] California Air Resources Board 2010.

[3] California Public Utilities Commission 2009.

California Building Code Title 24. Title 24 of the California Code of Regulations mandates how each new home and business is built in California. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings and for fire and life safety, energy conservation, green design, and accessibility in and around buildings. The 2010 triennial edition of Title 24 pertains to all occupancies that applied for a building permit on or after January 1, 2011, and remains in effect until the effective date of the 2013 triennial edition. This Inventory focuses on two sections of Title 24: Part 6 (the California Energy Code) and Part 11 (the California Green Building Standards Code). These two sections require direct electricity, natural gas, and water savings for every new home or business built in California. Title 24 is a statewide standard applied at the local level by local agencies through project review.

This Inventory incorporates the net energy benefit of new Title 24 requirements that did not exist in the baseline year. These estimates are based on California Energy Commission studies that compare each new update of Title 24 to its former version. The AB 32 Scoping Plan calls for ongoing triennial updates to Title 24 that yield regular increases in mandatory energy and water savings for new construction. As such, the GHG forecast also includes a conservative estimate of the energy and water reductions due to future updates of Title 24 based on historic growth rates. The energy reductions quantified in the forecast from Part 6 Energy Code updates are based on the assumption that the triennial updates to the code will yield regular decreases in the maximum allowable amount of energy used from new construction.

Low Carbon Fuel Standard. The Low Carbon Fuel Standard (LCFS) calls for CARB to achieve a reduction of at least 10% in the carbon intensity of California's transportation fuels by 2020. A preliminary injunction was issued in December 2011, which required implementation of the LCFS to be put on hold. CARB is currently appealing the decision. Until the legal standing of the program has been resolved, the LCFS will not be considered in the adjusted business-as-usual (ABAU) forecast.

California Solar Initiative. The California Solar Initiative (CSI) is a state program that provides cash rebates for the installation of an electric solar panel system. In order to qualify, the customer must buy electricity from one of California's three investor-owned utilities (SCE, Pacific Gas and Electric, or San Diego Gas & Electric).

Community ABAU Forecast

All of the state programs and policies discussed about are included in the community-wide adjusted business-as-usual (ABAU) forecast. As a result of state efforts, San Dimas's emissions would decrease by 23,730 $MTCO_2e$ (8%) by 2020 and 36,500 $MTOCO_2e$ (12%) by 2035 compared to the baseline inventory. More than half of these reductions are a result of the Pavley standards, with changes to the RPS making up another major component. **Table B-10** and **Figure B-6** highlight the role of state policies in reducing San Dimas's community-wide emissions.

Table B-10: Impact of State Policies on Community GHG Emissions, 2020 and 2035 ($MTCO_2e$)

State Reductions Summary	2020	2035
Pavley I Reductions	24,950	38,660
RPS Reductions	13,050	21,350
CSI Reductions	2,040	2,690
CA Building Code Reductions	1,030	960
Total State Reductions	**41,070**	**63,660**

** Due to rounding, the total may not equal the sum of component parts.*

Municipal ABAU Forecast

Only certain state reduction programs affect the municipal BAU forecast, which in the case of San Dimas includes the RPS and the Pavley standards, although the RPS is expected to have a larger impact. CALGreen will have no impact in this scenario because the City is not planning to construct new facilities, and the CSI program is not applicable to municipalities. **Table B-11** shows the effect of the included state reduction efforts on BAU emissions. Because of these efforts, municipal operations are expected to decline 17% (300 $MTCO_2e$) by 2020 and 23% (400 $MTCO_2e$) compared to the baseline inventory. The City has also taken steps since 2006 to reduce energy use, and all of these reductions will be quantified and reported in the city's Energy Action Plan.

Table B-11: State-Adjusted Municipal BAU Forecast ($MTCO_2e$)

State Reductions Summary	2020	2035
Pavley I Reductions	60	100
RPS Reductions	120	180
CA Building Code Reductions	–	–
Total State Reductions	**180**	**280**

** Due to rounding, the total may not equal the sum of component parts.*

Reduction Targets

The next step is for the City is to determine energy reduction targets for 2020 and 2035. The new energy reduction targets will be the goal of the EEAP and a quantitative way of measuring the Plan's success. The EEAP's energy reduction targets will set the groundwork for any GHG reduction targets found in a future climate action plan.

STATE-RECOMMENDED 2020 AND 2035 REDUCTION TARGETS

While the state reductions represent a significant decrease in emissions, AB 32 recommends that local governments adopt a GHG reduction target of 15% below baseline (2005–2008) levels by 2020. The State has not adopted GHG reduction targets beyond 2020; however, in 2005, then-Governor Schwarzenegger signed Executive Order S-3-05, which created a goal to reduce GHG emissions to 1990 levels by 2020 and to 80% below 1990 levels by 2050. While not legislatively mandated, it is anticipated that the State will adopt targets similar to those included in Executive Order S-3-05 after the State's achievement of the 2020 target can be better evaluated.

The emissions reductions from state efforts, although considerable, are insufficient to allow the City of San Dimas to meet the 2020 target outlined in the AB 32 Scoping Plan. To achieve this goal, the City would need to reduce its community-wide emissions by a further 22,370 $MTCO_2e$, or 8% below the ABAU forecast. To be on track to meet the 2050 goal in Executive Order S-3-05, San Dimas would need to reduce community-wide emissions by 132,520 $MTCO_2e$, or almost 50% below the ABAU forecast. These targets are outlined in **Table B-12**.

Table B-12: Community GHG Emissions and State-Recommended Reduction Targets ($MTCO_2e$)

	2020	2035
AB 32 Target Percentage Reduction from Baseline	15%	55%
Emissions Goal	261,210	138,290
Adjusted BAU Forecast with State Reductions	283,580	270,810
Local Reduction Needed from Adjusted BAU	22,370	132,520

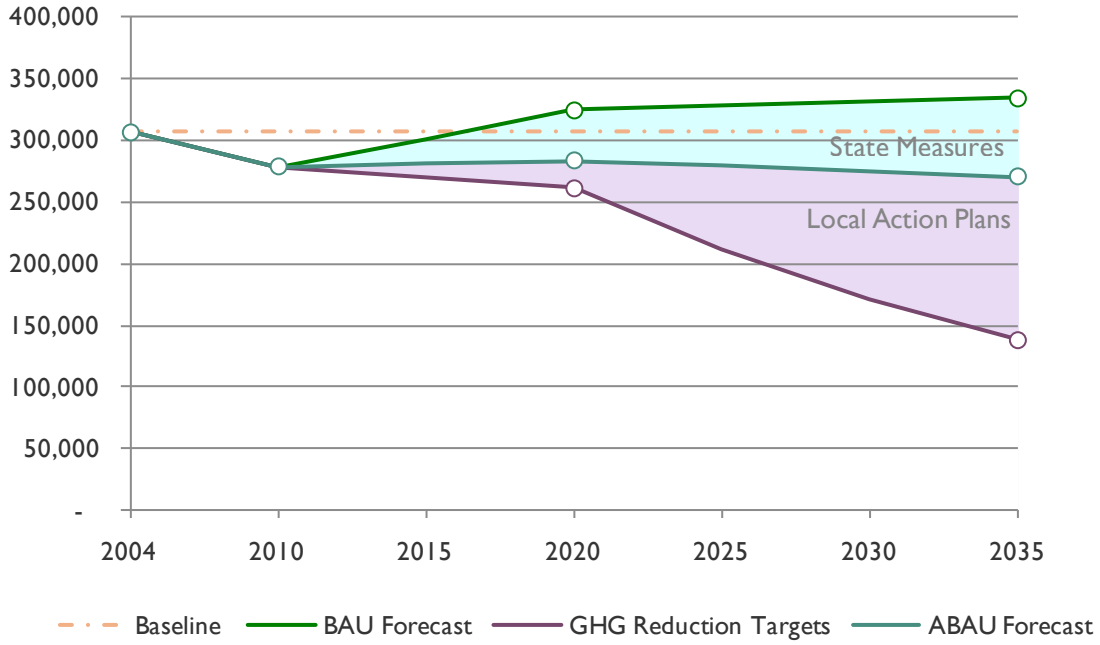
These State-recommended goals can also be applied to municipal operations, as illustrated in **Table B-13**. State policies are expected to be sufficient to allow the City to meet its 2020 goal, although San Dimas should still work to reduce emissions from municipal operations in the event that state measures do not achieve the expected reductions. To be on track to meet the 2050 target, the City will have to reduce its emissions by about 42% (560 $MTCO_2e$) beyond those resulting from state policies.

Table B-13: Municipal GHG Emissions and State-Recommended Reduction Targets

	2020	2035
State-Recommended Reduction Targets (percent below baseline)	15%	55%
State-Recommended Emissions Goal ($MTCO_2e$)	1,490	790
ABAU Forecast with State Reductions ($MTCO_2e$)	1,450	1,350
Local Reduction Needed from Adjusted BAU ($MTCO_2e$)	**-40**	**560**

Figure B-6 shows the City's BAU and ABAU forecasts in relation to baseline and recommended 2020 and 2035 reduction targets. The gap between the purple and blue lines (the purple-shaded area) represents actions that San Dimas will have to take to reduce its community-wide emissions, in addition to reductions achieved as a result of state programs. The EEAP currently under development seeks to close that gap with actions and policies to reduce the amount of electricity used in San Dimas.

Figure B-6: GHG Forecast & State-Recommended Reduction Target Summary



Conclusion and Next Steps

The community and municipal inventories are important milestones for assessing and mitigating San Dimas's impact on climate change from the activities of the people, businesses, and industry. The Inventory also provides data that will shape the development of the EEAP by providing a justifiable basis for the City's analysis of its impact on climate change. The next step will be for San Dimas to review and confirm Inventory findings and determine how the community will achieve the desired 2020 GHG reduction target through development of the Electricity Energy Action Plan.

APPENDIX C

GHG METHODS AND ASSUMPTIONS REPORT

This technical appendix provides a summary of the data sources, assumptions, and performance metrics utilized in this Energy Action Plan to quantify the estimated kilowatt-hours (kWh) savings, and greenhouse gas (GHG) reductions. The sources and metrics are organized by policy and rely on four primary types of data and research: (1) the city's GHG emissions inventory and forecast, (2) government agency tools and reports, (3) case studies in similar jurisdictions, and (4) scholarly research.

Whenever possible, emissions reduction estimates are based on tools and reports provided by government agencies such as the US Environmental Protection Agency (EPA), California EPA, California Energy Commission (CEC), California Air Resources Board (CARB), California Air Pollution Control Officers Association (CAPCOA), and local air districts. If accurate reduction estimates are not available through these tools, a case study may be used if the case study is comparable to the conditions in the city. Finally, for reduction measures that lack actual on-the-ground testing or analysis, current scholarly and peer-reviewed research is combined with knowledge of existing city practices to create an estimate of potential kWh and GHG reductions.

Table C-1: Emissions Factors and Sources for 2006 Baseline Inventory

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
SCE Electricity	641.26	lbs CO_2/MWh	LGOP v1.1, Table G.6	0.00029	$MTCO_2e$/kWh
	0.031	lbs CH_4/MWh	LGOP v1.1, Table G.7		
	0.009	lbs N_2O/MWh	LGOP v1.1, Table G.7		
Direct Access Electricity	889.75	lbs CO_2/MWh	LGOP v1.1, Table G.7	0.00041	$MTCO_2e$/kWh
	0.031	lbs CH_4/MWh	LGOP v1.1, Table G.7		
	0.009	lbs N_2O/MWh	LGOP v1.1, Table G.7		
SoCal Gas – Natural Gas	53.06	kg CO_2/MMBtu	LGOP v1.1, Table G.1	0.00532	$MTCO_2e$/Therm
	0.005	kg CH_4/MMBtu	LGOP v1.1, Table G.3		
	0.0001	kg N_2O/MMBtu	LGOP v1.1, Table G.3		
Stationary Diesel	10.21	lbs CO_2/Gallon	LGOP v1.1, Table G.1	0.01027	$MTCO_2e$/Gallon
	0.0015	lbs CH_4/Gallon	LGOP v1.1, Table G.4		
	0.0001	lbs N_2O/Gallon	LGOP v1.1, Table G.4		
Fleet Gasoline	8.78	kg CO_2/Gallon	LGOP v1.1, Table G.11	0.00878	$MTCO_2$/Gallon
	.0107 - .4090	g CH_4/mile*	LGOP v1.1, Table G.12	.0107 - .4090	g CH_4/mile*
	.0038 - .1726	g N_2O/mile*	LGOP v1.1, Table G.12	.0038 - .1726	g N_2O/mile*
Fleet Diesel	10.21	kg CO_2/Gallon	LGOP v1.1, Table G.11	0.01021	$MTCO_2$/Gallon
	.0005 - .0051	g CH_4/mile*	LGOP v1.1, Table G.12	.0005 - .0051	g CH_4/mile*
	.0012 - .0048	g N_2O/mile*	LGOP v1.1, Table G.12	.0012 - .0048	g N_2O/mile*
Fleet CNG	0.054	kg CO_2/scf	LGOP v1.1, Table G.11	0.000054	$MTCO_2$/scf
	0.737	g CH_4/mile	LGOP v1.1, Table G.13	0.000031	$MTCO_2e$/mile
	0.05	g N_2O/mile	LGOP v1.1, Table G.13		
Fleet LPG	5.59	kg CO_2/Gallon	LGOP v1.1, Table G.11	0.00559	$MTCO_2$/Gallon
	0.037	g CH_4/mile	LGOP v1.1, Table G.13	0.000022	$MTCO_2e$/mile
	0.067	g N_2O/mile	LGOP v1.1, Table G.13		

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
On-Road Transportation	505.5	g CO_2/mile	EMFAC 2011	0.00053	$MTCO_2e$/mile
	1.05	CO_2e/CO_2	Fehr & Peers Transportation Consultants		
Off-Road Construction	825	tons CO_2/day in LA County	OFFROAD2007	273,900	$MTCO_2e$/year in LA County
	0.0989	tons CH_4/day in LA County	OFFROAD2007		
	0.0007	tons N_2O/day in LA County	OFFROAD2007		
Off-Road Lawn and Garden	8.03	tons CO_2/day in LA County	OFFROAD2007	3,410	$MTCO_2e$/year in LA County
	0.0148	tons CH_4/day in LA County	OFFROAD2007		
	0.0063	tons N_2O/day in LA County	OFFROAD2007		

** Dependent on vehicle's model year and size.*

Table C-2: Emissions Factors and Sources for 2010 Inventory

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
SCE Electricity*	630.89	lbs CO_2/MWh	LGOP v1.1, Table G.6	0.00029	$MTCO_2e$/kWh
	0.029	lbs CH_4/MWh	LGOP v1.1, Table G.7		
	0.01	lbs N_2O/MWh	LGOP v1.1, Table G.7		
Direct Access Electricity*	919.64	lbs CO_2/MWh	LGOP v1.1, Table G.7	0.00042	$MTCO_2e$/kWh
	0.029	lbs CH_4/MWh	LGOP v1.1, Table G.7		
	0.01	lbs N_2O/MWh	LGOP v1.1, Table G.7		
SoCal Gas – Natural Gas	53.06	kg CO_2/MMBtu	LGOP v1.1, Table G.1	0.00532	$MTCO_2e$/Therm
	0.005	kg CH_4/MMBtu	LGOP v1.1, Table G.3		
	0.0001	kg N_2O/MMBtu	LGOP v1.1, Table G.3		
Stationary Diesel	10.21	lbs CO_2/Gallon	LGOP v1.1, Table G.1	0.01027	$MTCO_2e$/Gallon
	0.0015	lbs CH_4/Gallon	LGOP v1.1, Table G.4		

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
	0.0001	lbs N_2O/Gallon	LGOP v1.1, Table G.4		
Fleet Gasoline	8.78	kg CO_2/Gallon	LGOP v1.1, Table G.11	0.00878	$MTCO_2$/Gallon
	.0107 - .4090	g CH_4/mile**	LGOP v1.1, Table G.12	.0107 - .4090	g CH_4/mile**
	.0038 - .1726	g N_2O/mile**	LGOP v1.1, Table G.12	.0038 - .1726	g N_2O/mile**
Fleet Diesel	10.21	kg CO_2/Gallon	LGOP v1.1, Table G.11	0.01021	$MTCO_2$/Gallon
	.0005 - .0051	g CH_4/mile**	LGOP v1.1, Table G.12	.0005 - .0051	g CH_4/mile**
	.0012 - .0048	g N_2O/mile**	LGOP v1.1, Table G.12	.0012 - .0048	g N_2O/mile**
Fleet CNG	0.054	kg CO_2/scf	LGOP v1.1, Table G.11	0.000054	$MTCO_2$/scf
	0.737	g CH_4/mile	LGOP v1.1, Table G.13	0.000031	$MTCO_2e$/mile
	0.05	g N_2O/mile	LGOP v1.1, Table G.13		
Fleet LPG	5.59	kg CO_2/Gallon	LGOP v1.1, Table G.11	0.00559	$MTCO_2$/Gallon
	0.037	g CH_4/mile	LGOP v1.1, Table G.13	0.000022	$MTCO_2e$/mile
	0.067	g N_2O/mile	LGOP v1.1, Table G.13		
On-Road Transportation	491.8	g CO_2/mile	EMFAC 2011	0.00052	$MTCO_2e$/mile
	1.05	CO_2e/CO_2	Fehr & Peers Transportation Consultants		
Off-Road Construction	879	tons CO_2/day in LA County	OFFROAD2007	291,660	$MTCO_2e$/year in LA County
	0.0853	tons CH_4/day in LA County	OFFROAD2007		
	0.0007	tons N_2O/day in LA County	OFFROAD2007		
Off-Road Lawn and Garden	8.97	tons CO_2/day in LA County	OFFROAD2007	3,690	$MTCO_2e$/year in LA County
	0.0144	tons CH_4/day in LA County	OFFROAD2007		
	0.0061	tons N_2O/day in LA County	OFFROAD2007		

** 2010 factors not available. 2007 factors used as a proxy.*
*** Dependent on vehicle's model year and size.*

Table C-3: Sources for Community Inventory Activity Data

Subsector	Source
Residential Electricity	Southern California Edison
Residential Natural Gas	Southern California Gas Company
Commercial/Industrial Electricity	Southern California Edison
Commercial/Industrial Natural Gas	Southern California Gas Company
Direct Access Electricity	Southern California Edison
Street & Traffic Lighting	Southern California Edison
On-Road Transportation	Fehr & Peers Transportation Consultants; SCAG 2003 RTP
Waste – Solid Waste	CalRecycle online Disposal Reporting System
Waste – Green Waste	CalRecycle online Disposal Reporting System
Waste – Transformed	CalRecycle online Disposal Reporting System
Off-Road Equipment	California Air Resources Board's OFFROAD2007 model
Water	PMC's San Gabriel Valley Regional Water Model
Wastewater	PMC's San Gabriel Valley Regional Water Model

Table C-4: Sources for Municipal Inventory Activity Data

Subsector	Source
Buildings – Electricity	Southern California Edison
Buildings – Natural Gas	Southern California Gas Company
Fleet Fuel Use	City records
Public Lighting Electricity	Southern California Edison
Employee Commute	Online City survey completed by City employees
Government-Generated Solid Waste	City records

Table C-5: Quantification Sources and Citations

Policy	Policy 1.1: Identify existing retrofit programs and create new programs to facilitate voluntary residential energy efficiency improvements.
Implementation Actions:	- Encourage residents to participate in Southern California Edison-funded retrofit programs such as Energy Upgrade California. - Support programs that provide funding of residential energy audits for representative building types to highlight energy efficiency opportunities that can be applied to similar properties throughout the community.
Applicable Reduction Target:	Existing Residential - 20% below 2006 electricity use
kWh Reductions (2020):	-6,558,500 to -19,417,800
$MTCO_2e$ Reductions (2020):	-2,340 to -6,940
Assumed Reduction per Participant:	Yearly savings of 1,200 to 2,000 kWh of electricity from weatherization programs, and 1,300 to 4,100 kWh from SCE-funded retrofit programs such as Energy Upgrade California.
Performance Target(s) (2020):	Participation of 2,800 to 3,400 homes in weatherization programs and 2,450 to 3,070 households in SCE-funded retrofit programs.
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development and Public Works
Reduction Methodology:	Participation rates in current City programs, such as SHARES and the Home Repair program, were used to inform target participation rates in home retrofit programs. Case studies from several Energy Upgrade California participating homes in Los Angeles County were used to estimate the potential savings of participation households.
Reduction Sources:	Table B.1 of Estimating the National Effects of the US Department of Energy's Weatherization Assistance Program with State-Level Data: A Metaevaluation Using Studies From 1993 to 2005. ORNL. September 2005. http://weatherization.ornl.gov/pdf/CON-493FINAL10-10-05.pdf City of San Dimas. Housing Element. REAS, Inc. Residential Energy Assessment Services (REAS), Inc. 2011. Encino, CA Home Energy Performance Assessment. REAS, Inc. Residential Energy Assessment Services (REAS), Inc. 2011. San Fernando, CA Home Energy Performance Assessment. Building Doctors. 2011. Los Angeles CA Home Energy Performance Assessment. US Census Bureau. 2006-2010 American Community Survey 5-Year Estimates. Table DP-4: Selected Housing Characteristics.
Policy	**Policy 1.2: Host contractor, youth, and homeowner education and training events to support the development of an energy-efficient community.**
Implementation Actions:	- Promote the development of the local workforce by supporting contractor training and certification for energy efficiency retrofits, including Building Performance Institute (BPI) training, or other electricity efficiency workforce development programs. - Continue to provide energy efficiency information on the City website and materials at City Hall and city events to promote energy efficiency improvements in partnership with

Policy	Policy 1.2: Host contractor, youth, and homeowner education and training events to support the development of an energy-efficient community.
	the San Gabriel Valley Energy Wise Program and similar local and regional programs.
Applicable Reduction Target:	Existing Residential - 20% below 2006 electricity use
kWh Reductions (2020):	-397,290 to -893,900
$MTCO_2e$ Reductions (2020):	-140 to -320
Assumed Reduction per Participant:	160 to 240 kWh
Performance Target(s) (2020):	2,450 to 3,680 households
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Using the Bonneville Power Administration source on behavioral-based energy efficiency programs, a 1-2% reduction per participant was multiplied by the average household kWh use. This figure was multiplied by target participation of 20-30% of city households.
Reduction Sources:	Bonneville Power Administration (BPA). 2011. Residential Behavior Based Energy Efficiency Program Profiles 2011. http://www.bpa.gov/Energy/n/pdf/BBEE_Res_Profiles_Dec_2011.pdf

Policy	Policy 1.3: Collaborate with owners of historic buildings to improve the energy efficiency of historic properties while maintaining the character and integrity of the building.
Implementation Actions:	- Collaborate with property owners to disseminate information regarding energy efficiency upgrades and retrofits appropriate for historic buildings through brochures, websites, and other outreach tactics. - Provide information about appropriate energy efficiency measures for historic properties. - Identify historic building typologies (Queen Anne, Colonial Revival, Craftsman, Spanish Colonial, etc.) for energy audits on select building types and identify energy efficiency upgrades most appropriate for each building type. - Maximize energy efficiency through implementation of the Town Core Design Guidelines by incorporation energy efficiency standards into the guidelines. - Create incentives such as an expedited and streamlined plan review process for building permit applications to complete energy efficiency upgrades and building repairs consistent with the Secretary of the Interior Standards for Rehabilitation. - Revise the City's Mills Act Historic Property Preservation Agreement Application to encourage property owners to identify projects that maintain the historic integrity of the building while improving energy efficiency. - Utilize the Walker House to highlight rehabilitation efforts that can also improve the energy efficiency of the historic building.
Applicable Reduction Target:	Existing Residential - 20% below 2006 electricity use
kWh Reductions (2020):	-227,500 to -1,435,000
$MTCO_2e$ Reductions (2020):	-80 to -510
Assumed Reduction per Participant:	Yearly savings of 1,300 to 4,100 kWh of electricity per year.

Policy	Policy 1.3: Collaborate with owners of historic buildings to improve the energy efficiency of historic properties while maintaining the character and integrity of the building.
Performance Target(s) (2020):	Participation of 175 to 350 homes in the City's historic core.
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development – Housing
Reduction Methodology:	Case studies from several Energy Upgrade California participating homes in Los Angeles County were used to estimate the potential savings of participation households. Participation was based on the number of historic homes in the City's historic core with an applied participation rate of 25-50%
Reduction Sources:	City of San Dimas. Housing Element. REAS, Inc. Residential Energy Assessment Services (REAS), Inc. 2011. Encino CA Home Energy Performance Assessment. REAS, Inc. Residential Energy Assessment Services (REAS), Inc. 2011. San Fernando CA Home Energy Performance Assessment. Building Doctors. 2011. Los Angeles CA Home Energy Performance Assessment.

Policy	Policy 1.4: Reduce energy use and plug-load demand through upgrades to household appliances and equipment.
Implementation Actions:	- Work with Southern California Edison to promote existing energy efficiency rebate offerings for appliances, heating, and ventilation equipment, and lighting fixtures by providing education and outreach materials for residential users.
Applicable Reduction Target:	Existing Residential - 20% below 2006 electricity use
kWh Reductions (2020):	-144,160 to -428,470
$MTCO_2e$ Reductions (2020):	-50 to -150
Assumed Reduction per Participant:	130 to 260 kWh per participating single-family home and 180 to 360 kWh per participating multi-family home
Performance Target(s) (2020):	910 to 1,370 single-family homes and 180 to 360 multi-family homes
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Household electricity reductions from energy-efficient appliances were applied with assumed participation rate ranges for single-family and multi-family households. Since it is unlikely that all participants will purchase all quantified appliances, a target utilization rate was applied to the final reduction numbers.
Reduction Sources:	2010 Census ACS. CAPCOA. 2010. Quantifying Greenhouse Gas Mitigation Measures. http://capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf. US Census Bureau. 2006-2010 American Community Survey 5-Year Estimates. Table DP-4: Selected Housing Characteristics.

Policy	Policy 2.1: Work with the business community to integrate energy efficiency into business plans and daily operations.
Implementation Actions:	- Work with Southern California Edison (SCE) to promote existing energy efficiency rebate offerings for appliances, heating and ventilation equipment, and lighting fixtures by providing education and outreach materials for nonresidential users. - Partner with the San Dimas Chamber of Commerce by presenting at its regular meetings to highlight available conservation actions and energy efficiency programs to business and property owners. - Update the City's Small Business Development Guide to include resources and guidance to new or expanding on energy-efficient practices. - Continue to disseminate information regarding energy efficiency opportunities for businesses through the City website. - Work with SCE to encourage building and facility managers energy monitoring programs that inform energy use decisions and reduce peak energy demand such as SCE's Demand Response Program.
Applicable Reduction Target:	Existing Nonresidential - 20% below 2006 electricity use
kWh Reductions (2020):	Supportive - Not Estimated
$MTCO_2e$ Reductions (2020):	Supportive - Not Estimated
Assumed Reduction per Participant:	Supportive - Not Estimated
Performance Target(s) (2020):	Supportive - Not Estimated
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable

Policy	Policy 2.2: Facilitate retrofits and energy efficiency improvements within the nonresidential building stock.
Implementation Actions:	- Work with Los Angeles County and other regional public or private entities to create a revolving loan fund to support nonresidential retrofits that are not covered by utility rebates or other existing incentives. - Provide education and outreach to commercial property owners on the benefits of complying with state requirements such as Title 24 on energy disclosure at the time of sale or lease of nonresidential property. - Highlight energy-efficient practices implemented by local businesses as case studies to the community.
Applicable Reduction Target:	Existing Nonresidential - 20% below 2006 electricity use
kWh Reductions (2020):	-5,415,840 to -20,390,050
$MTCO_2e$ Reductions (2020):	-2,110 to -7,940
Assumed Reduction per Participant:	50,400 to 125,820 kWh per average size business

Policy	Policy 2.2: Facilitate retrofits and energy efficiency improvements within the nonresidential building stock.
Performance Target(s) (2020):	50 to 70 average size businesses
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Using the California End-use Survey (CEUS), the average percentage of electricity used on the building envelope and lighting (heating, cooling, and lighting) was applied to the overall nonresidential electricity kWh used in San Dimas. Citywide kWh nonresidential consumption by retrofit item was calculated by applying the CEUS figures for percentage of electricity consumed by each appliance. These kWh figures were then multiplied by the Brown et al. (2008) reduction by appliance estimates to calculate total kWh reductions by item, which were then summed to calculate overall reductions. A utilization rate was applied to the overall reductions because it is unlikely that each participant will upgrade every component of their building.
Reduction Sources:	Itron, Inc. 2007. California Commercial End-use Survey - Results Page. <http://capabilities.itron.com/CeusWeb/Chart.aspx> Brown, Rich, Sam Borgeson, Jon Koomey, and Peter Biermayer. 2008. U.S. Building-Sector Energy Efficiency Potential. Ernest Orlando Lawrence Berkeley National Laboratory, University of California. http://enduse.lbl.gov/info/LBNL-1096E.pdf Los Angeles County Office of the Assessor. 2012. Los Angeles County Parcel Viewer. Los Angeles. http://maps.assessor.lacounty.gov/mapping/viewer.asp

Policy	Policy 3.1: Work with project applicants to maximize the energy-efficient design and orientation of new buildings.
Implementation Actions:	- Work with project applicants to develop energy-efficient buildings that comply with the Town Core guidelines. - Support the use of innovative and alternative building materials such as cool roof materials and heat-reflective paints and designs that improve energy efficiency, when they do not conflict with community design guidelines or compromise Town Core character. - Support local green building organizations such as the Los Angeles chapter of the US Green Building Council to provide training and workshops. - Encourage project applicants to participate in SCE's "Savings by Design" program.
Applicable Reduction Target:	Maximize the energy efficiency of new buildings.
kWh Reductions (2020):	-1,700 to -5,280
$MTCO_2e$ Reductions (2020):	<10
Assumed Reduction per Participant:	Participating new development is estimated to increase efficiency 15 to 25% above Title 24 building code standards.
Performance Target(s) (2020):	Participation of 3 to 5 new multi-family homes and 11 to 21 new single-family homes.
Implementation Time Frame:	Mid-Term

Policy	Policy 3.1: Work with project applicants to maximize the energy-efficient design and orientation of new buildings.
Implementation Department(s):	Community Development
Reduction Methodology:	A target participation rate was applied to the estimated number of new homes to be developed by 2020 to gain the number of participating developments. Information from the 2010 report by the California Air Pollution Control Officers Association titled Quantifying Greenhouse Gas Mitigation Measures was applied to target improvements above Title 24 building standards to estimate the electricity reductions from efficient design of new homes.
Reduction Sources:	CAPCOA (California Air Pollution Control Officers Association). 2010. Quantifying Greenhouse Gas Mitigation Measures.

Policy	Policy 3.2: Identify opportunities to support the integration of energy efficiency upgrades as part of building remodels or tenant improvements.
Implementation Actions:	Continue to share resources and materials such as the Green Building Remodeling Guides on the City's website and at the planning and building public counter.
Applicable Reduction Target:	Maximize the energy efficiency of new buildings.
kWh Reductions (2020):	-58,020 to -564,050
$MTCO_2e$ Reductions (2020):	-20 to -210
Assumed Reduction per Participant:	Participants are assumed to reduce annual electricity use by 1,160 to 4,030 kWh.
Performance Target(s) (2020):	50 to 140 home sales participating per year.
Implementation Time Frame:	Long-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Historical home sales from 2006 to 2010 were used to estimate a range in future yearly home sale. Methods used to estimate reduction from home energy retrofits in policy 1.1 were used here to calculate the future savings.
Reduction Sources:	REAS, Inc. Residential Energy Assessment Services (REAS), Inc. 2011. San Fernando CA Home Energy Performance Assessment. Building Doctors. 2011. Los Angeles CA Home Energy Performance Assessment.

Policy	Policy 3.3: Encourage the use of energy-efficient appliances and equipment in new buildings.
Implementation Actions:	- Encourage all size developments to install energy-efficient appliances within new and renovated buildings. - Prioritize the implementation of energy efficiency related mitigation measures for new projects with potentially significant GHG emissions impacts.
Applicable Reduction Target:	Maximize the energy efficiency of new buildings.
kWh Reductions (2020):	-418,390 to -1,075,110
$MTCO_2e$ Reductions (2020):	-160 to -410

Policy	Policy 3.3: Encourage the use of energy-efficient appliances and equipment in new buildings.
Assumed Reduction per Participant:	120 to 250 kWh per single-family household and 180 to 350 kWh per multi-family household
Performance Target(s) (2020):	Participation of 3,320 to 4,290 single-family homes and 60 multi-family homes.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Household electricity reductions from energy-efficient appliances were applied with assumed participation rate ranges for new single-family and multi-family households. Since it is unlikely that all participants will purchase all quantified appliances, a target utilization rate was applied to the final reduction numbers.
Reduction Sources:	CAPCOA (California Air Pollution Control Officers Association). 2010. Quantifying Greenhouse Gas Mitigation Measures.

Policy	Policy 3.4: Participate in a regional effort to implement energy efficiency standards for new development.
Implementation Actions:	- Collaborate with the San Gabriel Valley Energy Wise Partnership and the Los Angeles Chapter of the US Green Building Council to provide local training and workshops for energy-efficient building opportunities. - Work with San Gabriel Valley cities involved in the energy action planning process to identify the most effective options to achieve energy efficiency in new development. Confirm the feasibility of adopting regionally consistent, mandatory standards for new development energy efficiency standards, such as adoption of Los Angeles County's green building code.
Applicable Reduction Target:	Maximize the energy efficiency of new buildings.
kWh Reductions (2020):	Supportive Policy - Not Estimated
$MTCO_2e$ Reductions (2020):	Supportive Policy - Not Estimated
Assumed Reduction per Participant:	Supportive Policy - Not Estimated
Performance Target(s) (2020):	Supportive Policy - Not Estimated
Implementation Time Frame:	Long-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Supportive Policy - Not Applicable
Reduction Sources:	Supportive Policy - Not Applicable

Policy	Policy 4.1: Identify funding opportunities and financing programs to support community energy efficiency upgrades and retrofits.
Implementation Actions:	-Work with the San Gabriel Valley Council of Governments and other cities to pursue regional funding as available for residential audits and/or retrofits. - Pursue grants or other financial sources to fund home retrofits. - Identify local credit unions and financial institutions to underwrite loans that support energy efficiency upgrades and investment in the local economy as a component of an implementation plan. - Encourage nonresidential property owners to participate in the Los Angeles County Property Assessed Clean energy financing program to improve the energy efficiency of their facilities.
Applicable Reduction Target:	Supportive of residential and non-residential reduction targets
kWh Reductions (2020):	Supportive Policy - Not Estimated
$MTCO_2e$ Reductions (2020):	Supportive Policy - Not Estimated
Assumed Reduction per Participant:	Supportive Policy - Not Estimated
Performance Target(s) (2020):	Supportive Policy - Not Estimated
Implementation Time Frame:	Long-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Supportive Policy - Not Applicable
Reduction Sources:	Supportive Policy - Not Applicable

Policy	Policy 4.2: Provide educational opportunities and recognize best practices to support energy-efficient behaviors and practices.
Implementation Actions:	- Collaborate with other energy efficiency organizations to develop an energy-efficiency awards program to recognize and award prizes to homeowners that have achieved energy efficiency improvements in their homes to market opportunities to the community.
Applicable Reduction Target:	Supportive of residential and nonresidential reduction targets
kWh Reductions (2020):	Supportive Policy - Not Estimated
$MTCO_2e$ Reductions (2020):	Supportive Policy - Not Estimated
Assumed Reduction per Participant:	Supportive Policy - Not Estimated
Performance Target(s) (2020):	Supportive Policy - Not Estimated
Implementation Time Frame:	Long-Term
Implementation Department(s):	Community Development
Reduction Methodology:	Supportive Policy - Not Applicable
Reduction Sources:	Supportive Policy - Not Applicable

Policy	Policy 5.1: Enhance and protect the community's urban forest to maximize the energy efficiency benefits of tree shading and cooling.
Implementation Actions:	-Maintain the City's designation from the National Arbor Day Foundation as a Tree City U.S.A. -Highlight the energy conservation benefits of the City's tree preservation ordinance and heritage tree designations. -Utilize the community forestry management plan to identify additional opportunities to plant trees within the public right-of-way. -Continue to provide maintenance and planting resources to the community. -Coordinate with other regional conservation organizations to convert the City's Tree Trek Map into a web or mobile application that identifies heritage trees, provides resources on proper tree maintenance and planting, and allows the community to add trees to the City's tree inventory database.
Applicable Reduction Target:	Supportive of residential and non-residential reduction targets
kWh Reductions (2020):	-125,990 to -1,185,690
$MTCO_2e$ Reductions (2020):	-50 to -450
Assumed Reduction per Participant:	10 to 60 kWh per household and 8,890 to 14,820 kWh per average size business
Performance Target(s) (2020):	2540 to 5,090 households and 60 to 160 average size businesses
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development and Public Works
Reduction Methodology:	Shade trees can have a direct impact on decreasing the air conditioning load in buildings. This occurs when a tree's shade prevents the building from heating up throughout the day from the sunlight hitting windows and exterior walls. Using end-use surveys for both residential and commercial buildings, the average air conditioner electricity use was calculated for both homes and businesses. This was applied to the community-wide electricity use to estimate the total amount of electricity used in the city for air conditioning. A range of percentage reductions to cooling related energy use per shade tree, taken from ICLE's CAPPA tool, were applied to a 2020 assumed tree planting goal to get a range of electricity reductions.
Reduction Sources:	Itron, Inc. California Commercial End-use Survey - Results Page. 2007. <http://capabilities.itron.com/CeusWeb/Chart.aspx> ICLEI - Local Governments for Sustainability. 2012. Climate and Air Pollution Planning Assistant (CAPPA) Version 1.5. US Census Bureau. 2006-2010 American Community Survey 5-Year Estimates. Table DP-4: Selected Housing Characteristics. KEMA, Inc. 2009/2010. California Residential Appliance Saturation Study, Volume 2: Results. CEC-200-2010-004.

Policy	**Policy 5.2: Maximize the use of cool roofs and surfaces to reduce building energy use.**
Implementation Actions:	- Promote cost-effective opportunities to residents and business owners to install cool roofs, light-colored paved surfaces, and permeable pavement. - Provide incentives to energy-efficient ambassadors and community organizations to lead cool roof "work days" to re-paint traditional roofs at schools or public facilities with cool paint materials. - When cost-effective, use cool-colored and permeable pavement in City construction projects.
Applicable Reduction Target:	Supportive of residential and non-residential reduction targets
kWh Reductions (2020):	-286,610 to -674,360
$MTCO_2e$ Reductions (2020):	-110 to -250
Assumed Reduction per Participant:	Not Applicable
Performance Target(s) (2020):	Replace 1% to 5% of urban surfaces
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development and Public Works
Reduction Methodology:	Urban roadways and parking lots built or replaced with high-albedo pavements increases reflectivity, reduces urban temperatures, and can decrease building energy use. A percentage of urban surfaces were assumed to have an increase in reflectivity, in turn reducing the amount of electricity used in community-wide buildings.
Reduction Sources:	California Building Standards Commission. 2010. California Code of Regulations, Title 24: Part 11: California Green Building Standards Code. http://www.documents.dgs.ca.gov/bsc/CALGreen/2010_CA_Green_Bldg.pdf Hashem Akbari. Energy Savings Potentials and Air Quality Benefits of Urban Heat Island Mitigation. http://heatisland.lbl.gov/ US Environmental Protection Agency. 2005. Reducing Urban Heat Island Compendium of Strategies: Cool Pavements. http://www.epa.gov/heatisld/resources/pdf/CoolPavesCompendium.pdf

Policy	**Policy 6.1: Work with the City's water provider to identify the anticipated water savings from the implementation of additional tiered water rates, water delivery system upgrades, and other water efficiency projects.**
Implementation Actions:	- Collaborate with the City's water provider, currently Golden State Water Company (GWSC), to highlight the water-energy relationship in future updates to the Urban Water Management Plan. - Highlight the GSWC Demonstration Garden as a model for water-efficient landscaping and the water savings achieved. - Promote and distribute GSWC's water efficiency kits and appliances and Southern California Edison's energy efficiency kit, which includes low-flow showerheads and faucet aerators, by providing educational and outreach materials in an energy efficiency kiosk and at the front counter.
Applicable Reduction Target:	Supportive of residential and non-residential reduction targets

Policy	Policy 6.1: Work with the City's water provider to identify the anticipated water savings from the implementation of additional tiered water rates, water delivery system upgrades, and other water efficiency projects.
kWh Reductions (2020):	-1,542,020 to -1,713,360
$MTCO_2e$ Reductions (2020):	-580 to -650
Assumed Reduction per Participant:	29,480 to 31,030 gallons saved per capita
Performance Target(s) (2020):	Reach 90 to 100% of water users through reduction programs.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development
Reduction Methodology:	The actions in this policy support the 20% water reduction goal identified in the 2010 San Dimas Urban Water Management Plan (UWMP). Since the UWMP already has actions outlined to achieve the goal, and since the City is not a water provider, the kWh reductions as a result of achieving the goal were quantified. Baseline (a 10-year average, identified in the UWMP) and 2020 gallons per capita per day were multiplied by EEAP-identified baseline and 2020 service population estimates, and converted to gallons per year. The difference between the two figures was identified to estimate the target gallons per year reduction. The UWMP 2020 projected water use by account type was utilized to estimate the amount of the target water reduction that would be removed from indoor and outdoor use, respectively. The estimated reduction in indoor water use was multiplied by the San Dimas kWh per gallon coefficient, identified in the GHG Inventory and Forecast. Indoor water use was assumed to enter the waste water system. The gallons of indoor water reduction was also multiplied by the wastewater collection kWh per gallon coefficient. The two kWh figures were summed to calculated total reductions.
Reduction Sources:	Golden State Water Company. 2011. 2010 Urban Water Management Plan San Dimas

Policy	Policy 6.2: Support water-efficient landscaping to reduce the electricity demand for water transport and treatment.
Implementation Actions:	- Utilize the model energy efficiency code to encourage drought-tolerant landscaping and the use of water-efficient irrigation systems. - Renovate irrigation controllers to conserve water in street medians. - Share promotion with the Golden State Water Company to highlight additional water-wise landscaping workshops and demonstrations on partner organizations' websites.
Applicable Reduction Target:	Supportive of residential and nonresidential reduction targets
kWh Reductions (2020):	-1,272,700 to -1,414,110
$MTCO_2e$ Reductions (2020):	-180 to -200
Assumed Reduction per Participant:	29,480 to 3,1030 gallons saved per capita
Performance Target(s) (2020):	Reach 90 to 100% of water users through reduction programs.
Implementation Time Frame:	Near-Term

Policy	**Policy 6.2: Support water-efficient landscaping to reduce the electricity demand for water transport and treatment.**
Implementation Department(s):	Community Development
Reduction Methodology:	The actions in this policy support the 20% water reduction goal identified in the 2010 San Dimas Urban Water Management Plan (UWMP). Since the UWMP already has actions outlined to achieve the goal, and since the city is not a water provider, the kWh reductions as a result of achieving the goal were quantified. Baseline (a 10-year average, identified in the UWMP) and 2020 gallons per capita per day were multiplied by EEAP-identified baseline and 2020 service population estimates, and converted to gallons per year. The difference between the two figures was identified to estimate the target gallons per year reduction. The UWMP 2020 projected water use by account type was utilized to estimate the amount of the target water reduction that would be removed from indoor and outdoor use, respectively. The estimated reduction in outdoor water use was multiplied by the San Dimas kWh per gallon coefficient, identified in the GHG Inventory and Forecast.
Reduction Sources:	Golden State Water Company. 2011. 2010 Urban Water Management Plan San Dimas